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### 08 Technology Of 2015

It's the start of a new year, so what better time to look at what the world of technology is likely to be bringing us in the coming months? From wearable tech to new types of hard drives, there's plenty to be getting excited about, and Mark Pickavance is here with a selection of some of the best

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## 56 Chrome Tweaks

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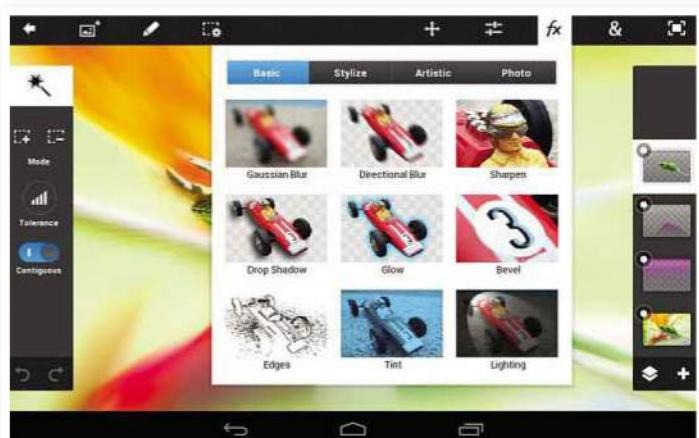
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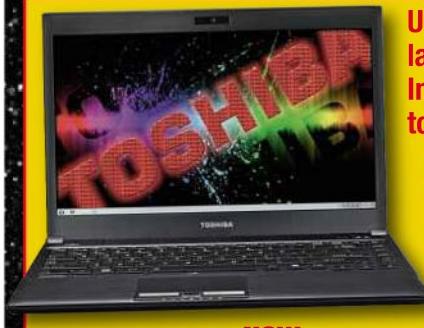
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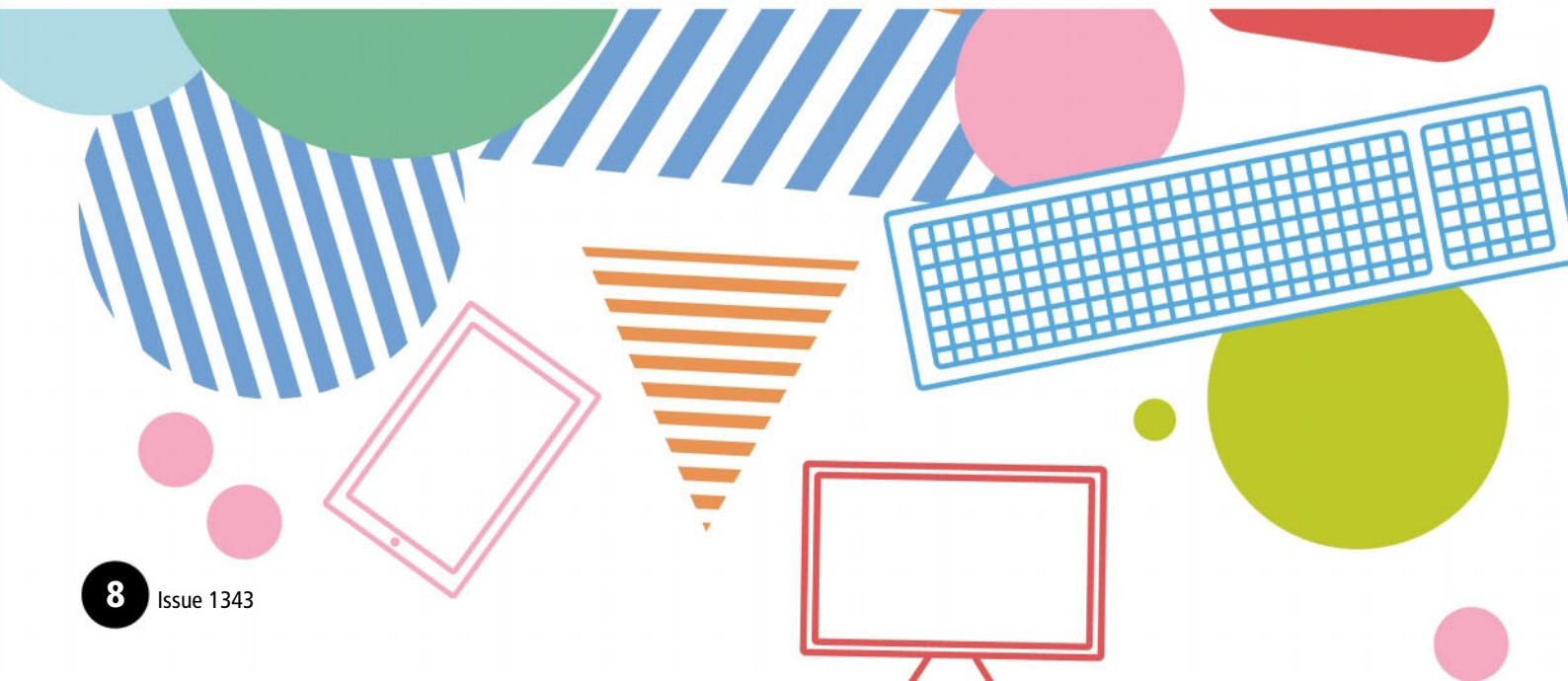
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# The Big New Technology Of 2015

**Mark Pickavance** looks at some interesting new technologies you'll be seeing launched in the coming months





**A**s a technology journalist, I've continually exasperated by technology that is announced with much aplomb, only disappear without trace. Often, it seems, making a technology work in the sterile environment of a lab is one thing, but converting it to a retail product is substantially more difficult. With this in mind, here are some of the critical technologies scheduled to arrive in 2015 – but with almost no guarantee that they'll all actually appear as promised.

### Cat10 LTE

Those with long enough memories will recall the brave new world of streamed content that 3G phone technology was supposed to usher in. Since then we've had '4G' – which, as many people have pointed out, doesn't actually reach the speeds defined by that standard. Nevertheless, it took over from 'LTE' as the commonly used label for that improved mobile data technology.

2015 will be the year when we see the first get Cat10 LTE, which the phone marketers will no-doubt label '5G', even if that has never been defined or specified. The whispers circulating at this time is that it will be South Korean operation Samsung that will offer a Cat10 LTE modem in their mobile devices some time within the next 12 months.

The technology will be merged into the Samsung Exynos SoC, its own ARM solution, which it's been using to stop its reliance on Qualcomm processors. This should play well with the Korean home audience, as this region has the highest penetration of LTE services (more than 60%) of any location on earth. However, those in places that haven't seen a massive LTE growth, like the UK (5%) and Germany (3%) might be less excited.

The issue here is, having been burned by buying those 3G licences at exorbitant prices, European networks aren't prepared to invest in LTE with the gusto required to make it widespread. This, then, creates a cycle of reduced demand for a service that only works in major cities. Given that there are large parts of the UK where you can't even get 3G – despite the money that was lavished on that – the arrival of Cat10 LTE in London might not sell a huge amount of new phones. For those interested, though, the Cat10 service would (theoretically, at least) eclipse the performance of Cat6 LTE (aka 4G LTE) by between 50% and 100%. Existing LTE can support downloads of 300Mbps, uplink peak rates of 50Mbps, where CAT10 LTE should increase that to 452Mbps, uplink peak rates of 102Mbps.

What you'll need this performance level for is, at this time, unclear – nor is how much of a phone's power might be consumed to achieve those levels. However, If this level of performance could be reliably maintained (a big if...), then this could actually overtake physical broadband as the fastest internet connection technology.

Qualcomm has revealed that it's also working on a Cat10 LTE capability, but has yet to announce when it will be available and what markets it will target. It has, however, confirmed that its forthcoming Snapdragon 810 SoC will support Cat9 LTE. That's a technology that is a step down from Cat10, which can achieve the same download performance but only 50Mbps uploads. It is also rumoured that, while the Qualcomm offering might not have the super upload performance of the Samsung part it, will work with a wider range of spectrums, making it more attractive to other phone makers.

**“I predict this will ultimately be a re-run of the incredibly limp ‘4G’ rollout”**

While these two technological behemoths knock lumps out of each other to be called 'the fastest', phones are likely to get the technology before there is any infrastructure to exploit it. Because of this, I predict this will ultimately be a re-run of the incredibly limp '4G' rollout.

**The Good:** Amazing download and upload speeds for mobile devices  
**The Bad:** Coverage will be just as poor as 4G LTE, and you'll need a new phone to exploit it

### Shingled Magnetic Recording (SMR)

Weird technology terms are always de rigueur, but even by computing standards 'shingled magnetic recording' (SMR) sounds jolly odd. Since the advent of digital magnetic recorded data the layout of the disk surface has been managed by using 'tracks', which is special data that can be read to locate where on the disk surface the head is. That's worked well up till now, as it demarcates part of the surface for data and tracks, and the two should never overlap. Until now...

SMR allows track and real data to sit in such close proximity that they overlap, much like the way that rows of shingles do on the roof of a house. By doing this, the density of data per square centimetre has been increased to a breath-taking 1.33 terabytes per platter, at least another third over existing methodologies. It isn't, however, without the odd caveat.

With data and tracks so close, when data is written the tracks also need to be rewritten simultaneously, increasing the amount of data that is flowing through the drive system. That slows

the writing process, and limits the rotational speeds that can be achieved. Nevertheless, in the next few months we'll see the first SMR drives arrive from Seagate: in 8TB, 6TB and 5TB sizes with a rotational speed of 5900rpm and a large 128MB cache. According to Seagate they'll achieve about 150MB/s, which isn't very slow, but is noticeably less than its best 7200rpm designs. Because of this Seagate is sensibly branding these devices as 'Archive HDD'.

## 66 Expected to arrive this spring, the Apple Watch is a square iOS device that many people see as the natural successor to the iPod Touch/Nano product lines 99

What's great about this tech isn't the speed or the strange name, but the relatively low cost of owning some very large capacity storage. It has been reported that the 8TB Archive HDD will sell for just \$266 (£170), and backing that pricing up the first 5TB model I've seen for sale cost just £133. To put that in perspective, an 8TB Enterprise hard drive from HGST costs nearly £700, so these are super-cheap in comparison. As they become more popular, it will be interesting to see if they're suitable for NAS use, or they're more appropriate for backing them up.

Before I get a letter from the knowledgeable, I should acknowledge that Seagate has been selling SMR drives since 2013 for specialist use – but it looks like 2015 will be the year that the technology becomes

mainstream, and one where we could all have actually bought a drive specifically for archiving our media on by the end of the year. What SMR also does is open up the possibility of 3TB laptop drives, and maybe even a 10TB desktop unit before 2016 arrives.

If you're wondering where Western Digital will compete, it appears it's invested in its own technology that involves removing the air from inside its drives and replacing it with helium. When these reputedly seven platter mechanisms will appear isn't known, but it might well be this year as well.

Looking to spoil both these attempts at world domination, is IBM. It's supposedly designed a replacement for SSD that uses magnetised atoms – 12 of them in fact – to represent a bit. As each bit on a hard drive currently requires over a million atoms to store, so this could elevate capacities by several orders of magnitude. If they can bring this tech to market in 2015 then all bets in the storage sector could well be off.

**The Good:** Bigger hard drives than you ever thought possible, but that are still affordable

**The Bad:** Yet more big backup headaches

### Google Glass

This is surely the big year for Google Glass; though I'm sure I recall saying that 2014 would be the big year, it really is make or break now. It could go one of two ways: fly as a retail product and make history, or crashland and become a footnote (and maybe even cautionary tale) in the history of wearable tech.

The signs aren't good, as the project has been heavily funded but seems no closer to crossing some critical project milestones. It has also been reported that many developers who bought them are selling their prototype devices (in contravention of their EUA's with Google) on Ebay. There has also been a lot of generally bad press regarding people being abused simply for wearing Glass, which suggests this gear also has some social boundaries to navigate along with the technical challenges of making this gear useful.

# GLASS



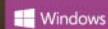


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Like so many concepts borrowed from science fiction, is Google Glass another device that seemed wonderful on paper but less inspiring in reality? If this technology is going to succeed it needs to be much less conspicuous from the outset, because it is very off-putting to people in the same way that having a camera pointed at you is – if you suddenly started doing that to everyone, you would expect a reaction, wouldn't you? At the moment you can control Glass using simple touch or voice commands, but some means of operating it with the eye or a wrist mounted device would seem more natural.

What's more, it needs to offer more than taking pictures and providing directions. If Google can expand Glass' repertoire, make it less likely to offend and have a decent battery life, then it might well succeed. When we see the retail version, if that is ever ready, we'll get a better idea if Google Glass has been redesigned to be more practical.

**The Good:** I never bought one

**The Bad:** Being thrown out of a cinema for pirating movies

### Adaptive Sync And G-Sync

Many modern displays are still based on analogue tube TV principles, and the technologies used to broadcast to them. One hangover from that era is the inflexible timeframe for refreshes, where a set number of frames are generated each and every second. Initially, this wasn't a problem because computers couldn't match the 50 or 60 frames per second that the displays used. The advent of hardware accelerated GPUs blew that out of the water, though, and a new situation arose where – due to mismatched refresh rates – screens would appear to 'tear'.

Faster refreshes helped, but it didn't address the intrinsically variable nature of gaming framerate, which varies under load. The real answer was to decouple the display from a constant refresh, and make it only cycle the display when a new frame was actually ready to be seen.

When DisplayPort was first designed, this was considered in the specification, but (at last) it will become a reality this year with Adaptive Sync. This isn't a totally new idea; Nvidia has its own G-Sync technology that does much the same thing. What's more, that will probably beat Adaptive Sync to market. AMD has 'FreeSync', though this is basically just re-branded Adaptive Sync with an implicit guarantee that it will work with AMD based video cards.

It looks like Nvidia could get most of 2015 to plunder the gaming display market while the rest play catch-up. The appearance (or not) of this tech is probably down to the poor panel makers, though, which don't make much profit from their products these days.

**The Good:** The end of screen tearing, in theory

**The Bad:** Competing standards rubbish, again



### USB 3.1

For the PC, and now mobile devices, USB has been a very successful technology. While other device connection technologies have come and gone, USB has transitioned elegantly from a technology that was really designed for mice, keyboards and printers into so much more.

USB 3.0 is fast enough to connect external drives but have them perform like their internal. It is still outpaced by SSD speeds, though – something that is going to be addressed by USB 3.1. The new standard will apparently double the data throughput over USB 3.0, the new standard offering speeds of 10Gbps (roughly 1.2GB per second). That's enough for most needs, including sending data to 4K displays.

**“These days Microsoft is ‘learning to listen’ apparently, and how well it’s learned will be apparent closer to the RTM version of its flagship OS”**

Along with this pretty impressive performance boost, the other major change is the introduction of the new Type-C small connector. This is about the same size as the old micro-USB 2.0 on phones and tablets, but offers much higher speeds and is also symmetrical (praise be). That should stop people damaging their USB ports by trying to insert the cable the wrong way up (admit it, you've done it), and make cabling up tablets and phones that much easier. It is also the same at each end, making for even greater uniformity, and even cheaper cables.

Thunderbolt might still be technically superior, but that doesn't seem to be doing it much good. For the foreseeable future USB will be the technology most PCs come with, and USB 3.1 looks likely to reinforce that status quo.

The USB 3.1 standard should be ratified in July, so expect devices for Christmas 2015.

**The Good:** Good technology gets even better

**The Bad:** More cable/connector shenanigans





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## More Wearable Tech

With many companies having invested heavily in wearable devices, we're likely to see a boatload of them in the coming months. This despite there being little or no evidence of any sort of demand exists for them among punters. So far the ones that have appeared have been criticised for their size, shape, recharge demands, that they only work with some phones, that they do very little, and that what they do is often already provided in a better form by a smartphone.

The one product that many people are betting on, though, is the Apple Watch (note, it is not called iWatch for whatever reason). The appearance of this and its capabilities (and price) have been heavily debated from the point where its existence was, at last, acknowledged in September 2014. Expected to arrive this spring, the Apple Watch is a square iOS device that many people see as the natural successor to the Touch/Nano product lines. It will work with any iPhone 5 or 6 (not 4 or 4S or prior), and uses Magsafe inductive charging to get the power it needs to work each day.

The expected price point is \$350, which, when you combine that with the iPhone you'll need, sends you through the \$1,000 total cost barrier (easily). The blessed few that have seen one have gushed about how nice it is, though a few less Apple-enthusiastic

commenters have pointed out that it does little more than the Moto 360 watch that Motorola released last September. That device is at least round, works with Android phones that aren't exclusively made by Motorola, and costs £199.

Want it or not, there will be plenty of wearable technology around in the next 12 months.

**The Good:** We can all look like Dick Tracy

**The Bad:** Yet another item to charge up each night

## Yet More 802.11

What is your favourite wi-fi protocol? Like the ponderous but reliable 'g', or have you gone to 'n' or 'ac' these days? Whatever you're using, there will be at least two new options this year to join the recent addition of 802.11ac, welcome 'ad' and 'ah'. Where ac will be the mainstream wi-fi technology going forward, these two new standards address specific issues where it doesn't perform well.

The issue addressed by 802.11ad is that created by multiple overlapping networks in a high traffic environment (like an office). What it allows the routers using this method to do is to be stacked using a virtual model. Thus clients connect to a virtual service the provision of which might be passed around, or even shared by, several routers. The common phrase for this type of tech is QinQ, as it is an amendment of an older standard, IEEE 802.1Q-1998.

For home users there is relatively little excitement to be found in 802.11ad, but luckily they may find 802.11ah more interesting. With the 2.4GHz and 5GHz bands now well occupied with



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many wi-fi services, 802.11ah uses the relatively untouched 1GHz range. What's good about this frequency is that it has exceptionally good range, and it requires relatively little power to drive. That makes it ideal for connecting many appliances in an Internet of Things fashion, but it is also useful for creating wide ranging rural network services.

A typical range of 1km, coupled with the inherent ability for multiple stations to work as relays, and good speed could make this the killer wi-fi technology for venues and shopping centres. With 26 channels each capable of 100Mbps, a very large number of mobile devices could be supported by each station, given sufficient backbone capacity. However, the biggest advantage for 802.11ah is that it uses a modified version of the 802.11a/g specification, potentially allowing older phone technology to be software modified to work with it.

Where 802.11ad might not be a big news story in 2015, 802.11ah very probably will be, as router makers jump the gun again and launch pre-hardware ahead of the standards ratification in 2016.

**The Good:** Greater wi-fi connectivity

**The Bad:** More 'pre' standards 802.11 tomfoolery

## Windows 10

Windows, the OS that just wouldn't go away. Not content with making phones nobody buys, tablets that cost a fortune, and a generally reviled version of Windows, Microsoft will step once more into the limelight with Windows 10. For those curious about exactly how you go about turning a sow's ear into a silk purse, you can download an alpha version of the new Windows now. In January, however, it will likely launch a proper consumer preview to initiate a more general discussion about how it's fixed the numerous structural and usability problems with Windows 8.

The disturbing part of this is that it is exactly what it did with Windows 8, where it thanked people for their feedback,

before entirely ignoring all that was said. These days Microsoft is 'learning to listen' apparently, and how well it's learned will be apparent closer to the RTM version of its flagship OS. However, what's been striking so far about the prototype is how relatively little it has so far changed from its starting point (Windows 8.1), other than adding a Start Menu back.

The official time frame for the release of Windows 10 is in the autumn, with my money being on either late September or early October. Any later than October and it won't make it onto the computers in time for the Christmas market. In terms of new technology, I'd expect Cortana (daughter of Clippy, grandchild of Bob) to make an appearance in this release. It might also resolve the major discord between the Metro and Desktop sides of Windows 8, and use a new DirectX built using the same thinking as AMD promoted with its Mantle technology.

However, the really big change might be in how you pay for Windows 10 rather than what technology Microsoft puts inside it. In a recent presentation that Microsoft COO Kevin Turner gave to attendees at a Credit Suisse technology investment conference in Phoenix, Arizona, he talked about how the income model for Windows 10 would need to be radically different. While he struck out the idea that Windows would be free or a 'loss leader', he accepted that the existing pricing scheme wouldn't work in an environment where operating systems are generally 'zero dollar'.

This comes on the back of Microsoft providing Windows 8.1 with Bing for free on devices with sub-9" displays since spring 2014. That does beg the question: if OEMs aren't paying for Windows, why should the consumer? Turner's plan, it appears, is to somehow monetise the services that Windows users access through the OS – though that does seem to ignore that many of them are actually owned by Google. He promised to better explain what it intends to do, presumably once it's actually worked it out, in early 2015.

Another critical change is the switch from having different operating systems on phones, tablets and PCs. Under Windows 10 they'll all use the same core functions, and they'll also have a common app store too. Microsoft has been working hard to provide a unified development environment where you'll be able to design an application and then compile from it something that works on an Intel PC or ARM-based phone/tablet at the same time.

As marvellous an idea as this sounds from a developer perspective, it does also suggest that the version of Windows 10 that we'll see on tablets from now on won't have a desktop – as ARM ones can't run desktop apps. Microsoft has been very quiet about releasing any more ARM based Surface machines, cancelling the Surface Mini even after manufacturing many thousands of them.

Two years after they launched Windows 8, the Microsoft Store doesn't contain all the apps that people might expect, and developers have generally ignored it. A cleaner development environment might help, but some evidence that people actually use Metro apps is the critical missing component.

If Windows 10 doesn't turn out to be the equivalent of what Windows 7 was to the frustrated hordes of Vista users, and Windows 8.x customers don't get it for free, the coming year could well be another bumpy ride for those who get big cheques at Redmond.

**The Good:** Goodbye Windows 8

**The Bad:** The seemingly infinitely repeated 'The Best Windows Yet' marketing message that will surely be rolled out! [mm](#)

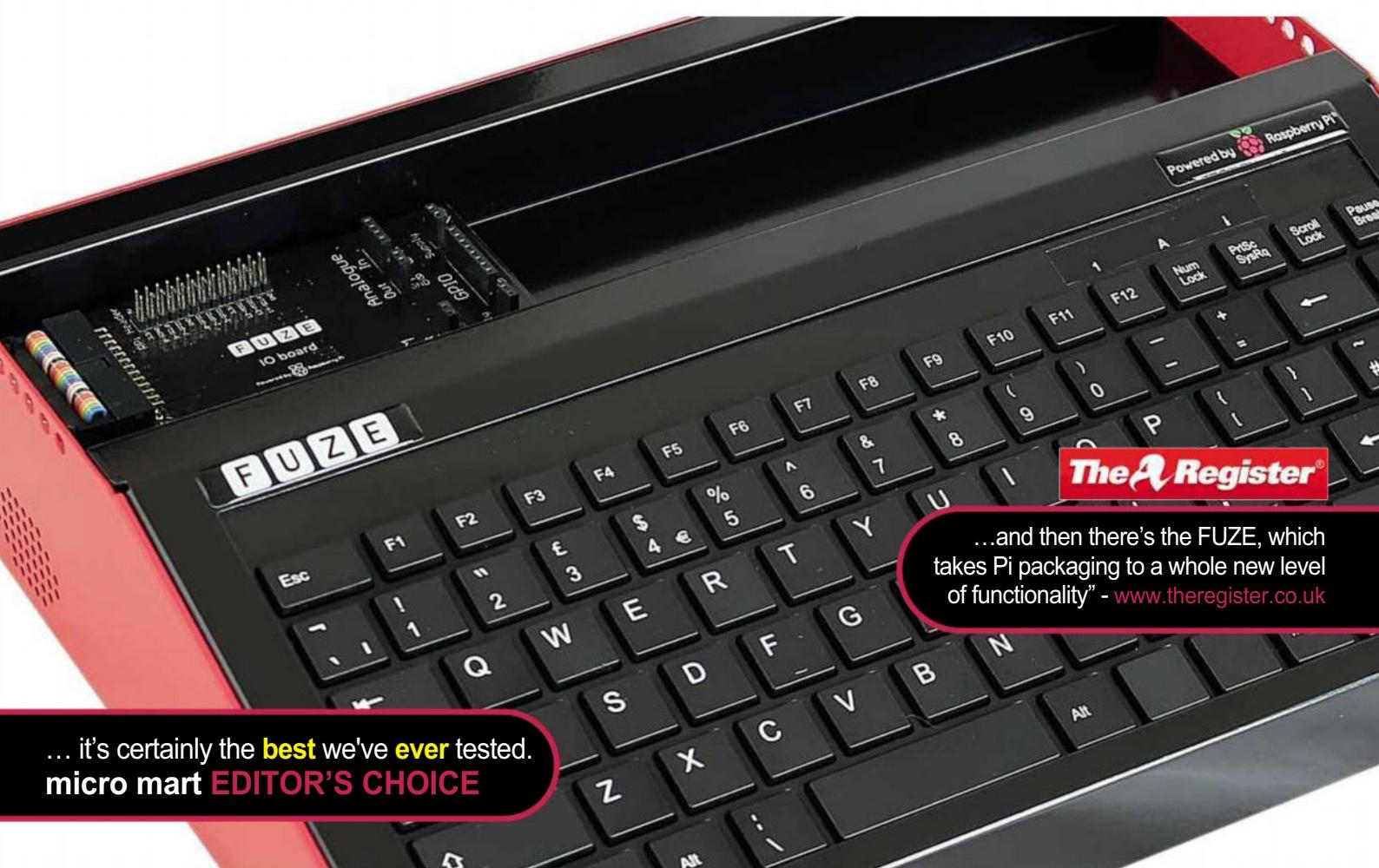


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# All I Want To Do Is Stream

**Tiny boxes, tiny boxes everywhere! Ian McGurren**

**checks out the little set-top boxes that can**

**R**emember Blockbuster? The video rental shop, not the student friendly innuendo-filled afternoon quiz. Remember when you wanted to watch the latest films you had to walk down there, pay £5 or so for a sizeable chunk of plastic and magnetic tape or, if you were lucky, a shiny disc. Then play it at home, hoping the tape isn't chewed up or the DVD scratched at an important moment in the film, and once viewed, you had to traipse all the way back there to return it or you'd be fined for keeping it too long. Great, wasn't it? Exercise and gambling in one dull task.

#### **Boxes Of Tricks**

Nowadays, of course, all that 'fun' is firmly in the past, as high speed internet means we get piping hot films streamed fresh to our houses – to our TVs even – all in sparkling high definition, with nary a silver coaster or oversized cassette in sight. Once the preserve of those of us willing to put a PC under our TVs in the name of home theatre (home theatre PCs, if you will), the streaming game can be as easy as two cables and a wi-fi password. However, with so many to choose from now, how can you understand which suits your purpose? Read on...

### Check The Specs

What should the ideal streamer do, then? Firstly, stream from the web. But not just any streams, it should be able to stream at least one of the terrestrial TV catch-up services from the BBC, ITV, Channel 4 or Channel 5. It should also offer access to a streaming film service, such as Netflix, Amazon Instant Video or Now TV Movies. Playback of local video files, either from a USB stick or DLNA local network is a must, and being able to play games or mirror a device's screen is a distinct bonus.



**▲ If you're all iThings at home, the Apple TV may be for you**

#### Apple TV - £69

Surprisingly one of the oldest streaming media players on the market, the Apple TV is something of an odd product for Apple. While it got on the streaming bandwagon very early on, the Apple TV hasn't really been as huge a success as Apple's other products. Part of this is down to the device being very Apple-centric and initially more geared towards purchased than rather than streamed material. Now, however, it offers

Airplay screen mirroring, as well as video and music streaming. With additional streaming services, such as Netflix and NowTV, if you have an iDevice, the Apple TV makes a great deal of sense, especially as you can also stream iCloud images and video easily on it too. Unfortunately, without one it's more redundant, as it has no DLNA or USB streaming to speak of. The third-generation version of Apple TV comes in at £69, which is quite high for what's on offer, and given the hardware is based on the iPad 2's A5 CPU, it's overdue for a revamp.

**TV apps:** Sky News

**Films:** Netflix, iTunes

**USB playback:** No

**DLNA:** No

**Mirroring:** Yes, via Airplay

**Games:** Limited selection via Airplay

#### WD TV Live - £79.99

Another oldie, the WDTV was one of the first boxes to play high-definition MKV files without fuss and the need for a Core 2 Duo PC. Technically, it wasn't a streamer, though; that came when networking was added to the WD TV to make the WD TV Live edition. It worked just as well, albeit as basically, essentially reading SMB shares on a network, including NAS drives. The



**▲ WDTV - The original streamer is showing its age**

## “Sky’s NowTV, at around £15, is one of the AV bargains of the century”

device later receive limited streaming too, with Netflix, BBC iPlayer and YouTube being the most useful. The latest version adds Miracast display casting, but strangely it removes Netflix, therefore leaving it less appealing than the competition, especially at £80, which makes it one of the pricier options. The WD TV was once the AV bargain of the year but time moves on, while the WD TV, sadly, has not.

**TV apps:** BBC

**Films:** Netflix

**USB playback:** Yes

**DLNA:** Yes

**Mirroring:** No

**Games:** No

#### Roku Streaming Stick - £49.99

The first of the 'stick' streamers (as opposed to the box ones) is the rather smart Roku Streaming Stick. No prizes for guessing what it does, of course. Roku has made itself a name in cheap, high-quality streamers in the last few years, and the stick carries this on.

If you've used a Roku box before, then the stick will be nothing new to you, because essentially the stick is the same Roku experience but in, well, a stick. This means you get access to a ton of content, including iPlayer, Netflix, Spotify, NowTV, Demand 5, ITV player, 4OD and even the mighty Plex, and all controlled

### The 4K Question

While 4K is all the rage with TV manufacturers, the limited amount of sources and unclear standards means that, as of the end of 2014, there are no true streaming media players capable of 4K playback. Yes, there are some Android players that claim 4K playback, but given Netflix or YouTube isn't streaming 4K to the Android app at present and these devices do not have HDMI 2.0 outputs, it's safe to assume they're using the term in dubious circumstances. Hopefully, 2015 will see the first true 4K streaming box, possibly the Fire TV 2, given Amazon's 4K content pledge.



▲ It's a stick that streams and it's made by Roku. Any guesses?

with a handy remote. Local streaming is also possible with the built-in app, but by wi-fi only, no USB. Additionally, despite plugging into the TV directly, the stick also requires powering from a USB port or charger.

## 66 There's not much the Fire TV offers for its £79 that the Roku stick doesn't for £40 99

The upside, however, it's great for hiding away or carrying elsewhere. For £49.99, the Roku Streaming Stick is great value and offers nearly all you'd want in a streamer at present.

**TV apps:** BBC, ITV, C4, C5, Sky NowTV entertainment

**Films:** Netflix, Sky NowTV movies, Amazon

**USB playback:** No

**DLNA:** Yes

**Mirroring:** photos, videos, music via Roku app

**Games:** no

### Roku 3 - £99

The big brother of the Streaming Stick, the Roku 3's main selling point is power that translates into speed. Essentially the same kind of device but with a quad-core CPU, a motion controller that also has a headphone port, USB, Ethernet and an SD card slot. So if you're dead set on grabbing high-bitrate 1080p Blu-ray .iso files with full lossless surround sound (via Plex), then the Roku 3 should definitely be on your list to check out. However, if you're mainly streaming from the web and some lower bitrate rips from your home server, the Roku 3 may just be overkill, with the Stick suiting you (and your pocket) better.

**TV apps:** BBC, ITV, C4, C5, Sky NowTV entertainment

**Films:** Netflix, Sky NowTV movies, Amazon

**USB playback:** Yes

**DLNA:** Yes

**Mirroring:** photos, videos, music via Roku app

**Games:** yes, basic



### Dogs Like Nice Apples?

Technology loves a good abbreviation, and DLNA is one of those that's not easy to figure out for yourself. It stands for Digital Living Network Alliance, which is a standard for streaming video from servers, computer and NAS drives to televisions, media players and even printers. Basically, it means you can stream stuff from your PC to this device. Sometimes manufacturers could do with a dose of plain English...

### Down The Line

Great though streaming video is for those of us who don't miss returning videos in the rain, its usefulness is governed by your internet connection, specifically its speed and your allowance. Make no mistake, video is data and bandwidth hungry, so if you're on either a slow (2mbps or less) connection, have a data cap or even both, then streaming video may not be for you. HD will require 3mbps or more, with 1080p starting at 5mbps. In terms of data, 720p Netflix is about 1GB per hour, with 1080p coming in at 2GB per hour.

### Cast Your Mind

You may have eyed up the list of devices and wondered why Google's chubby HDMI stick doesn't show up. The simple answer is that unlike the other devices here, on its own the Chromecast is useless. In order to work, the Chromecast needs to be instructed from another device, usually a phone, tablet or Chrome-enabled device, such as a Chromebook or computer running the Chrome browser. These devices then instruct the Chromecast where to find a video stream to play, such as on Netflix or YouTube. If you have a device that works with it, the Chromecast is worth a look, but all of the streamers here will do what it can do, and much more besides.

► When is a streamer not a streamer? When it's a Chromecast



### Sky NowTV – Around £15

If the interface looks like a Roku and the hardware is shaped just like a Roku, then it's got to be a Roku, right? Not quite. Ostensibly the Sky NowTV box is built to stream Sky's NowTV service of on-demand and live Sky channels and box sets to your TV – a it performs admirably, with the bonus that the service itself is one of the better streaming services available (it's basically Sky through the net).

Because it's based on the Roku 1 hardware, Sky deemed fit to also offer some of the Roku channel store too, so as well as NowTV, you also get BBC iPlayer, ITV player, 4OD and Demand 5, as well as Spotify and Tune In radio. Missing from that list sadly is Plex, but it's easily hacked onto the unit, making the NowTV, at around £15, one of the AV bargains of the century and a great way to dip your toes into the world of streaming video.



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## Let's Play!

Let's get one thing straight: the PlayStation TV isn't a streaming media player. Well, it is and it isn't. Confused? The PlayStation TV was formerly known by its more understandable name the Vita TV, as it's basically the guts of Sony's handheld under your TV. Therefore it's able to do most of what the Vita does, including playing Vita games, and – the device's *raison d'être* – streaming PS4 to a second screen. The Vita also has other tricks up its sleeve, like Netflix, Sony Video Unlimited, YouTube and more to come. The PlayStation TV doesn't yet have these but may do so in the future, and it does have some DLNA streaming capabilities the Vita doesn't. So is it a substitute for a streaming media player? Not yet, but until then, it does have some great games.



▲ PlayStation TV – small box, big potential



▲ Sky's NowTV is a streamer for the price of a pizza

**TV apps:** BBC, ITV, C4, C5, Sky NowTV entertainment

**Films:** Sky NowTV movies

**USB playback:** No

**DLNA:** Yes, via Plex app

**Mirroring:** No

**Games:** No

### Amazon Fire TV - £79

Long-time online purveyor Amazon has already shown it can not only provide digital distribution channels but also the devices on which to easily consume the media these channels provide. The Kindle ebook revolution is arguably on par with Apple's iTunes/iPod/iPhone assault on the music distribution industry, so what's to stop Amazon trying again with another format?

Enter Amazon video and its custom hardware, the Fire TV. Like the Fire tablets, the Fire TV runs a heavily customised version of Android, along with its hardware being based on the same Snapdragon 600 CPU that powers many Android devices. In use its snappy UI is good, the voice search function is excellent,



▲ Amazon's Fire TV is its first step into the TV arena

“**These little boxes will always offer flexibility. After all, changing a £60 box is much cheaper than changing a £600 television**”

and even the gaming is passable when the optional gamepad is used. However, unless you've invested a lot in Amazon, either by buying video from it or having the required Prime subscription, there's not much the Fire TV offers for its £79 that the Roku stick doesn't for £40. If you're after full-screen Android gaming, you may find the next box more up your alley..

**TV apps:** BBC, C5

**Films:** Amazon Instant Video, Netflix

**USB playback:** No

**DLNA:** Yes, via Plex app

**Mirroring:** No

**Games:** Yes

### Google Nexus Player - unknown

Currently a bit of an unknown quantity over here, and barely out in the States too, Google's Nexus Player is Google's fourth stab at the TV market. Having more in common with the older Google TV (and the aborted Nexus Q) than the Chromecast, the Nexus Player is akin to an 'official' version of the myriad of Android set-top boxes one might find on an auction site.

Looking about the size your brain thinks Wagon Wheels used to be when you were young, the puck-like player is designed to fade away into your AV rack. The UI is a bit more than perfunctory, though, taking Google's new Material Design to the big screen in a bold manner that moves with grace, thanks in part to the CPU-of-the-hour Intel's quad-core Atom and a PowerVR GPU. While the hardware is up to the job, and the OS is the best it can be, the apps cupboard is still bare, be it TV or even the games that the excellent optional joypad begs for.



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▲ Will the Nexus Player be fourth time lucky for Google?

**66 If you're on either a slow (2Mbps or less) connection, or have a data cap, or even both, then streaming video may not be for you 99**

While Google's on-screen success wasn't off to a great start with the Google TV, the Chromecast has been more warmly received. If Google can make the difference between the Nexus Player and the Chromecast clear, there's every chance the little robot will find itself welcomed into many living rooms.

**TV apps:** Unknown, likely BBC iPlayer at least.

**Films:** Netflix, Google Play Movies

**USB playback:** No

**DLNA:** Possible, via app

**Mirroring:** Yes

**Games:** Yes

#### Samsung BD-H6500 - £149.99

Just as popular in recent years as streaming media players has been the smart TV. There are in fact many parallels, with many seeing streamers as smart TV boxes for 'dumb' TVs. There's plenty of truth in this, as most cover very similar ground. One of the best smart TV platforms, Samsung's Smart TV has blazed the

#### Matchstick

The Fire TV isn't Amazon's only assault on the streaming market, as late to the game it announced the Fire TV Stick. In something of an obvious name, the Fire TV is another of the 'stick' type devices, like the Chromecast and Roku. The Fire TV Stick is more Roku than Chromecast, though, as it's able to do a majority of that which the Fire TV box is able to do. The spec is cut down (dual-core, not quad-core and no voice search) but for \$39.99 it's definitely worth a look. Amazon even cut the price to \$19.99 for pre-orders, making it nearly disposable. If it repeats the trick in the UK, even at a dollar to pound conversion, it's a definite contender.

trail that both smart TVs and streamers tend to follow now, with the combination of apps and streaming.

While Samsung doesn't offer a streamer per se, you can get the lion's share of the Smart TV platform in a box, with the addition of a 3D Blu-ray player too.

As a platform, it's extremely comprehensive, with all major terrestrial channels' on-demand services available, as well as Netflix, Amazon Instant Video and some more esoteric services such as Mubi and Curzon classic and independent movies. Add to this DLNA streaming with Allshare or Plex, wired and wireless network and USB, and although it may be £150 or so, there's an awful lot in that box.

**TV apps:** BBC, ITV, C4, C5

**Films:** Netflix, Amazon Instant Video, Mubi, Curzon

**USB playback:** Yes

**DLNA:** Yes, and also via Plex app

**Mirroring:** Yes

**Games:** No

#### A Stream To A Flood

As has become clear in recent years, live television is on the wane, and streaming media is most definitely the future of consumer visual media, be it on demand or catch-up. For now, streaming media players are often the best way to become part of this online revolution. But with over a third TVs sold in 2013 coming with smart streaming technology on board and the majority released in 2014 having these capabilities as standard, the little boxes may soon be taken over by the big screens.

However, these little boxes will always offer flexibility. After all, changing a £60 box is much cheaper than changing a £600 television. Plus, at the moment, some offer both incredible value for money and an easy way into the whole streaming game. If a streaming media player fits the bill for you now, then there's every reason to grab one the Christmas season. **mm**



▲ Turn your TV smart with the BD-H6500



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# Apple's SIM

**David Briddock exposes Apple's latest challenge to the mobile network industry**

In mid-October, Tim Cook took to the Apple stage at Cupertino to announce the iPad Air 2 and iPad Mini 3. Cook was keen to demonstrate just how slim, lightweight and fast they are compared to the previous models, and talk about the new high-resolution camera, plus a raft of other hardware and software improvements.

However, one new feature wasn't mentioned, a feature that could send shock waves around the mobile networking industry: the pre-installed Apple SIM.

So what makes the Apple SIM so different from the standard network SIM we already have in our phones and tablets?

Well, if you own a wi-fi and cellular enabled version of the iPad Air 2 or iPad Mini 3, you now have a facility to switch between short-term cellular data plans. In the US, these plans are provided by AT&T, Sprint and T-Mobile, while in the UK it's just EE, the company formed from the merger of Orange and T-Mobile.

This is the first time Apple has provided its customers with a choice of mobile networks on a single device. On its website, Apple describes the feature as, "One SIM. Many options."

The web page goes on to say, "The Apple SIM gives you the flexibility to choose from a variety of short-term plans from selected carriers in the US and UK right there on your iPad. So whenever you need it, you can choose the plan that works best for you — with no long-term commitments."

## Increased Flexibility

In reality, the concept of offering consumers SIM flexibility isn't brand new. Mobile phones that take two SIM cards have been popular in Asia and some northern European countries for quite a while. Dual SIM mobile phone owners can use one number for business and the other for personal use – all without the cost or inconvenience of purchasing and carrying two separate handsets.

While the Apple SIM remains a physical card, it also contains a special piece of SIM-embedded software. It's this software that allows users to switch between mobile networks and, of course, their respective tariffs, just by selecting an option from an on-phone menu.

**“It’s clear the implications are enormous, yet Apple could go further”**

Why did Apple decide to offer this capability now? Well, consumer analysis clearly shows that tablet owners tend to access the internet via wi-fi rather than a mobile network. So in a way there's nothing to lose, and it could be a win-win situation for both Apple and the network operators.

If it proves to be successful in raising mobile network usage, the Apple SIM might make an appearance in future iPods and MacBooks.

## Big Changes

As you're probably beginning to realise, this is no small change. In fact, the potential impact is huge.

Overnight it removes the traditional barriers to network switching, namely carrying multiple SIM cards or obtaining a PAC number, then waiting days for the switchover to happen.

An Apple SIM would be particularly useful when you find yourself in a location where wi-fi coverage isn't available. And when visiting countries with an Apple SIM supported cellular



## APPLE'S SIM

provider, the menu could dynamically change to display a list of local network options.

Of course, it also increases the pressure on mobile network operators and heightens market competition. Cost, speed and coverage will become important factors when an iPad Air 2 owner decides which option to select from the menu.

### Potential Problems

On the face of it, the Apple SIM appears to be a positive move for Apple consumers. But, as we so often discover, things aren't quite that simple.

Mobile network operators must negotiate with Apple to be on this list. How these negotiations are conducted and with whom is shrouded in secrecy, although we can imagine many heated exchanges took place during these meetings. The fact is at launch there was only a single network representative from outside the US – a clear sign that operators aren't at all sure if appearing on an Apple SIM menu would be a good thing.

And can we rely on Apple? After all, a future update to iOS might add or remove network operators in an instant, an event that could annoy owners who'd have no idea why it happened.

In addition, an Apple SIM only works with Apple devices. This may make consumers less inclined to switch to a similar tablet device from Samsung, Huawei or HTC, unless Google launches its own Android multi-network SIM (more on this possibility later).

### Network Games

Apparently, this kind of SIM flexibility is open to interpretation, and AT&T in particular isn't playing by the same rules when it comes to the Apple SIM. While Sprint and T-Mobile allow you to switch between networks as required, AT&T locks the Apple SIM to its network on selection. Even worse, after switching to AT&T, customers are then forced to obtain a new Apple SIM if they wish to continue to benefit from easy network switching.

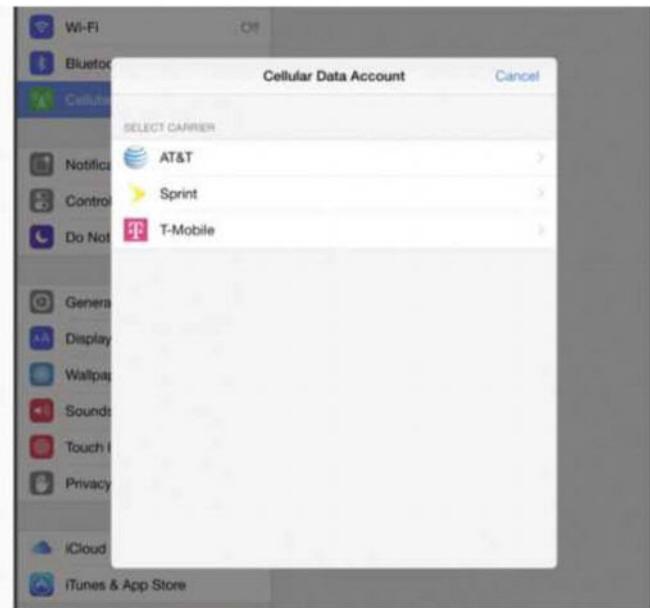
This situation seems to have taken Apple by surprise. In an updated Apple SIM support document, it now states, "For instance, in the United States, you can choose a domestic plan from either Sprint or T-Mobile and also pick an alternate plan from the other carrier as needed. When you choose AT&T on iPad Air 2 and iPad Mini 3, AT&T dedicates Apple SIM to their network only."

Of course, AT&T may decide to fall in line with Sprint, T-Mobile and EE at some point, especially if more network operators decide to join the list, but it's an indication of the industry's distrust and the fragility of these negotiations. As it stands, AT&T's lock-in position may seriously hamper Apple's attempts to attract operators in other countries.

### Questions, Questions

There's no doubt the Apple SIM fundamentally changes the relationship between mobile operators and their customers. Unfortunately, many questions still remain unanswered.

iPad mini	iPad mini 2	iPad mini 3	iPad Air	iPad Air 2
Starting at \$249 Wi-Fi	Starting at \$299 Wi-Fi	Starting at \$399 Wi-Fi	Starting at \$399 Wi-Fi	Starting at \$499 Wi-Fi



▲ Apple SIM menu

Currently, cellular-enabled tablets typically use monthly data plans. So what does 'short-term' actually mean in practice? How often can you switch networks? Once a day? At any time, based on signal strength or data charges? And will these short-term plans have attractive data rates or be charged at a premium?

And what of Google? Surely this is far too big an opportunity to let pass by? As far as we know Apple is fairly apolitical about networks. But Google certainly isn't. In fact, with Google Fiber, it's already playing the network game.

Now that Apple has placed a stake in the ground, a similar solution for Android tablets and possibly the increasingly popular Chromebook laptops seems highly likely. And then there's the wearable marketplace: watches and the ever growing list of fitness bands and accessories.

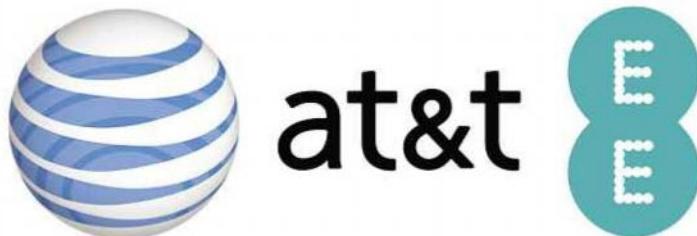
The retail telecommunication and services sector is keeping a watchful eye on proceedings too. Companies like BT and SKY have advanced plans to take a piece of the mobile network pie, and consumer movement towards cellular data plans would obviously affect wi-fi usage in cafes, pubs, transportation hubs and other public places for BT WiFi and others.

It's clear the implications are enormous, yet Apple could go further.

### Virtual SIMs?

Currently, the Apple SIM is a removable card, giving owners the option to replace it with one associated with a different network. But this might not always be the case.

If in future iPads had an embedded SIM (see boxout), the only options will be the ones on an Apple-certified list. All of a sudden Apple is in total control. And if Apple made such a move, surely Google would have to follow.



### Soft SIMs

While the Apple SIM is still a physical card, some initiatives do away with the card altogether. Just as with the iPad, they're targeted at data communications rather than the more complex voice scenarios.

The GSM Association is keen to broadcast that its embedded, or soft, SIM specification is finally starting to take off in the machine-to-machine (M2M) sector. In the M2M arena, embedded SIM technology is all about reducing costs.

Traditional SIMs are problematic in transportation, utility metering and other applications where devices are often difficult to access or hermetically sealed. But a soft SIM allows over-the-air operator provisioning, a critical feature if you are trying to manage, say, a large fleet of vehicles.

This standard has already been adopted by operators such as AT&T, Etisalat, NTT DoCoMo, Telefónica and Vodafone, so future Apple devices could well only have a software-implemented SIM.

With Apple and Google in charge of negotiations, the telecoms industry's practices and standards would effectively be driven by two companies, and operators could see their huge investments put at risk from a future Apple or Google SIM menu list decision.

### Softly Softly

This isn't the first time Apple has tried to challenge the classic SIM card. Around four years ago, Apple quickly backed away from a fully embedded SIM idea when European mobile operators threatened to withdraw subsidies and prioritise other smartphones over Apple devices.

**“This is no small change. In fact, the potential impact is huge”**

So maybe this extremely low-key introduction, limited to just data-centric tablet communication and an initial rollout of just two devices is all about gently testing the waters.

At present we don't know what the EU thinks of the Apple SIM. Will this softly softly approach pass under the EU's regulatory radar? Will it suddenly become a hot topic if Google does something similar?

But the question on many people's minds is whether Apple's current iPad-only strategy is just the beginning. Will it be extended to MacBook Air laptops? Or maybe eventually to a voice and data SIM for the iPhone?

The laptop scenario seems highly plausible, but in reality the embedded SIM smartphone isn't likely to arrive any time soon. And, at least initially, the mobile network operators would probably seek some sort of legislative protection to stop voice-SIM control being wrestled out of their hands.

Is this just an inevitable consequence of SIM evolution, the beginning of the end of the physical SIM card and the start of a new era in cellular communications?

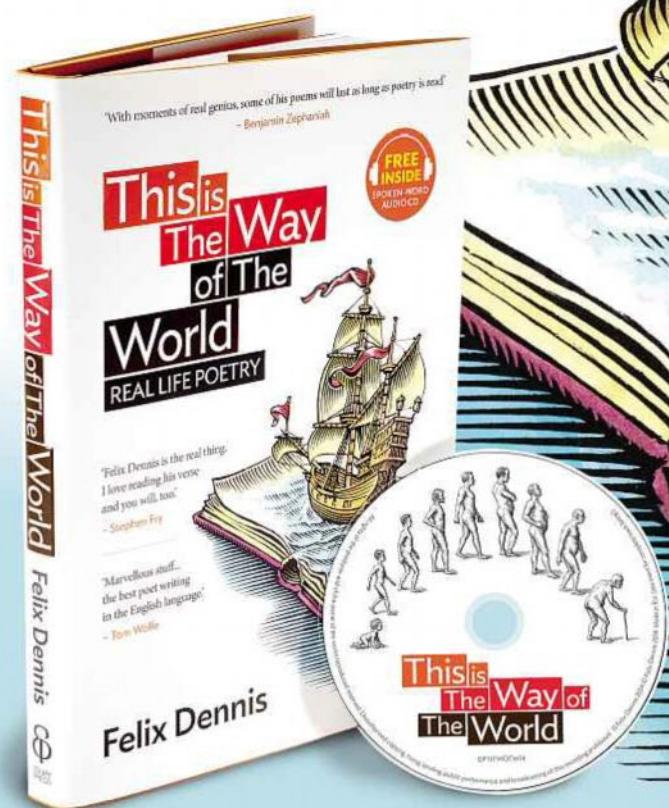
One thing's for certain: the next few years will be very interesting. **mm**

'With moments of real genius, some of his poems will last as long as poetry is read.'

– Benjamin Zephaniah

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# Your Letters

## Security

Whilst it was good to see your recent review of Internet Security software, perhaps more insight might have been given to the installation of these products.

I am not sure what sort of system you install these packages on, but I am sure mine is not unique. Firstly I decided to install Kapersky Internet Security 2015 on my system, only to find it would not complete the install because a previous version had apparently once been used on the system. This required yet another download of their removal tool to wipe clean the system. This is all very well if you can remember exactly what

version you had installed in the first place because the removal tool cannot tell.

In the end, I gave up trying to guess which version it was, as I could not get the programme to successfully install even after several runs of the tool. Who designs software that cannot install over a previous version of itself?

I then decided to go for Bitdefender, but this was not trouble-free. Installation was fine, but afterwards I could not access any email programme or get onto any website that required login at a secure webpage. It's a good job the helpdesk is good, as it sounds like they are going to be much in demand.

Basically their suggestion was to turn every module off and then turn them back on again one by one until the guilty culprit was found – very useful. It turned out to be the SSL scanning module which, just luckily, is actually the first one that I turned back on.

With the increasing complexity of Internet Security packages meaning increased costs and increased frustration, you might be pleased to know that on my netbook I installed the free Avast Anti-Virus suite, with no problems whatsoever. Time for the 'big boys' to take a note.

**Alan Strudwick**

## Nuisance Calls

Having read David Crookes' article on nuisance calls in issue 1337 I have to agree that they have become a pain to all people at home during the day. I stopped answering calls at home during the day after I got 13 calls in a four hour period (is this a record?).

This was a mistake as my granddaughter fell ill at school and as I am the main contact for the school there was no way for them to contact me!

I then decided to play the cold caller's game, and on my

answering machine I dropped it down to two rings before the answering message started and I recorded a message to inform them that they had reached a prize winning number. They had won a no expenses paid holiday to Florida on the airline Fly Gozunder. All they had to do was answer the simple question 'If  $E=MC^2$  what does J stand for?' I then informed all of my friends and relations to hang on after the message I will answer it. It has worked I get less than two unsolicited calls a day now and some weird answers. I change

the style of message every so often to keep them amused.

Being a pensioner I am reluctant to spend £34 to buy a phone from BT just to so it can relegate responsibility to technology. I have been part of the T.P.S. since 2010 and found in recent years a waste of time. I also asked BT not to put my name in the phone book, but its there for any cold caller to find. I can bet Her Majesty doesn't get cold calls.

**Dave Shaw**  
Telephone number withheld

## GET IN TOUCH...

**By email**  
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**Online**  
[forum.micromart.co.uk](http://forum.micromart.co.uk)

# Component Watch

**Here are some excuses for a bit of New Year's retail therapy to beat the gloom...**

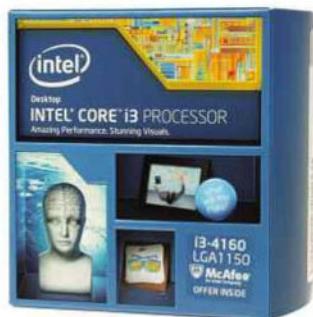
Well, it's a new year, and that means plenty of hardware on sale and plenty of reasons to buy it for yourself: depression over the end of the holiday season, excitement about the return to work or possibly even weather so bad that you'd rather stay indoors and play games than risk going outside in it. Whatever your reasoning for some retail therapy, we've pulled a few featured items from last month's sales special to remind you of the hardware you're supposed to be looking out for.

## Deal 1: Intel Core i3-4160

**RRP: £100 / Deal Price: £86**

One of the best and most recent budget Haswell chips, this 3.6GHz Core i3 CPU is a processor that's worth watching out for, especially if you can beat the price we've found. Pair it with a graphics card for a passable gaming system or use it to power any solid general use system. Whatever your plans and reasoning, getting on the Haswell ladder is all the excuse you need to buy one!

**Where to get it:** Dabs ([bit.ly/1BRCRRS](http://bit.ly/1BRCRRS))



## Deal 2: Intel Core i5-4690K

**RRP: £240 / Deal Price: £179**

Alternatively, why not go for this super-powerful Core i5 processor instead? As well as being a low-power, high-performance Haswell chip it's also overclockable (notice the 'K' suffix?), meaning that the right gamer can get the fastest speeds out of it. The limited onboard graphics are the only weak point, but if you're not pairing this card with a solid GPU then you deserve all the underperformance you get.

Right now, it's one of Intel's best value chips – not least because of the high levels it can be forced to operate at with the right tweaks! That value is significantly improved with this handy discount.

**Where to get it:** Scan ([bit.ly/1pTv8ua](http://bit.ly/1pTv8ua))



## Deal 3: EVGA Nvidia GT 730 2GB

**RRP: £60 / Deal Price: £46**

This 2GB card is the 64-bit version of the GT 730 released last June, and it's the new standard for entry-level gaming cards. A high-end GK208 chip makes it about as good as a GeForce GT650 in benchmarks, which is considerably better than its price suggests – especially if you can find it at a discount. If you're already a gamer it probably won't jazz your system up much, but if you've only got an onboard GPU, prepare to be amazed by it.

**Where to get it:** Ebuyer ([bit.ly/1IY332j](http://bit.ly/1IY332j))



## Deal 4: Asus Radeon R9 270X DirectCU II

**RRP: £220 / Deal Price: £184**

This high-end card might not be the cheapest around, but between 4GB of RAM and a factory-overclocked GPU, it's going to handle anything you throw at it with the greatest of ease. You'll need a powerful system (the TDP is 225 watts!), but its age and high price mean it's a great candidate for the sales. Keep a look out for this one – it's definitely worth your time.

**Where to get it:** CCL ([bit.ly/1GqNXQB](http://bit.ly/1GqNXQB))



## Deal 5: TP-Link Archer C20i

**RRP: £100 / Deal Price: £50**

Already one of the lowest-price Wireless AC routers you'll find around at the moment, a sale discount almost makes this unmissable. AC750 speeds mean plenty of bandwidth for everything from downloads to HD streaming, as well as USB file and print sharing and three internal antennae for strong, omnidirectional coverage. Definitely the router you need (and, indeed, deserve) if you're planning to upgrade.

**Where to get it:** Ebuyer ([bit.ly/1zn4Byw](http://bit.ly/1zn4Byw))





# Original Apple 1 Sold For Oodles At Auction

## Qualcomm's Snapdragon 810 Details Out There

### 4K focus for new chip

This year – mid-2015, so we're told – sees the release of Qualcomm's new Snapdragon 810 mobile chip on mobile handsets and the firm has let loose a few snippets surrounding the processor during a presentation in New York.

Built on a 20nm process that uses around 25% less power than current 28nm chips, the main focus is undoubtedly support for 4K video, allowing users to play and record 4K content. Support for 4K resolution displays also means that users can wirelessly stream video via a proprietary HDMI dongle connected to a TV, which should come into its own in 2015 as the cost of 4K viewing comes down. Qualcomm is adopting ARM's 64-bit Cortex A57 and A53 CPU designs, four of each providing eight cores for the chip while Qualcomm's own Adreno 430 GPU will provide graphics support.

Away from 4K support, the Snapdragon 810 supports 802.11ac wireless, Category 9 LTE support for a possible maximum download speed of 450Mbps, plus support for WiGig wireless with the ability to transfer at speeds up to 7Gbps.

Everything remains on track for mobiles featuring this later this year.



## Baidu Leaks High-End Windows Phone Snaps

### Cancelled McLaren handset on site

You may, or may not, have heard about Microsoft's planned McLaren high-end mobile phone. Cancelled earlier this year, the phone was due to feature Microsoft's 3D Touch gesture technology, but it never saw the light of day. Thanks to Chinese website Baidu, however, there are now some photos in the wild of what purports to be said mobile phone. Have a look for yourself via your browser of choice.

The photos show off features including a microSD slot, a large 20MP camera and that aforementioned 3D Touch capability. Why was the phone really killed off? We can't be sure for certain, but bear in mind that at the time it was cancelled Microsoft was laying people off a-plenty, plus of course the failure of 3D Touch to see the light of day (as yet) must have played some part.

## **Antique worth nearly £250,000**

**A**s is the case with these kinds of things, a fully-operational Apple 1 computer has sold at auction for a lot of money. The auction took place at Christie's, with the auction house slapping an estimate of between \$400,000 and \$600,000 on the machine. It didn't make that much, in the end – but \$365,000 isn't too bad a figure, is it?

In case you were wondering, that adds up to around £230,000 in proper money, but with

less than 50 of these machines thought to still exist, you can only imagine that the next one to come up for sale will go for a similar amount, if not more.

The Henry Ford Museum must be kicking itself, having paid \$905,000 for a similar machine back in October, but someone will be happy at these things selling for so much, given the original \$666.66 asking price. That's a tidy profit, even if they have had to wait 38 years for it.



Sometimes, computer equipment goes wrong. That's just a fact of life, and even those of us who know a thing or two about these things will need a helping hand from time to time to fix problems.

However, I don't recall the last time I asked for advice or solutions from the manufacturer of technology I own. As Mark Oakley points out, it's far more likely these days to type the problem into a search engine and to then be taken to a user forum.

Too often manufacturers will just present you with an FAQ section, and even a phone call will likely result in you being fed prewritten lines by a call centre worker. Sometimes, it seems practically impossible to get any help at the source.

Thankfully, communities exist where the members are willing and able to help each other, because otherwise many of us would find ourselves lost. Companies should take more responsibility, but nevertheless it's good to see people banding together to help. Long may it continue.

Until next time,

*Anthony*

Editor

# **Microsoft Readies January Event**

## **Windows 10 details to be fleshed out?**

**C**ircle the 21st January if you have even a passing interest in Windows 10, as Microsoft is planning an event called 'Windows 10: The Next Chapter' later this month. Detailed in a Microsoft blog, the event will talk about "the next chapter of Windows 10" and the Windows 10 consumer experience, with even some words from the big man himself, Satya Nadella.

There is tantalisingly little else by way of information in the blog post, but it's a fair guess that this event will map out some of the features that Windows 10 will bring to the table. A few details have leaked out, though, including

the presence of Xbox chief Phil Spencer, who will presumably talk all about gaming on Windows (which took rather a backseat to the Xbox One fanfare during 2014).

There may also be some discussion of support for the

Continuum feature, adapting the UI relating to whether the device concerned has a keyboard or touchscreen functionality, Cortana and maybe even a release date. Or, you know, you may have much more exciting things to look forward to.



# Meanwhile... On The Internet...

**D**eadlines being what they are, as we were putting together this week's column, the internet was still busy digesting – and generally getting an ulcer over – Sony's decision to pull *The Interview* from its release schedules completely ([tinyurl.com/MotI1343a](http://tinyurl.com/MotI1343a)).

At the moment, we appear to be hitting peak-thinkpiece in terms of reaction to the very real threats the so-called Guardians of Peace (GoP) made to anyone planning on seeing the comedy and, perhaps more pertinently, any cinema planning to show it. In the wake of the broken-English threats to life, limb and building, AMC was the first to blink, pulling the film from its schedules – a move quickly followed by other chains and finally by Sony itself ([tinyurl.com/MotI1343b](http://tinyurl.com/MotI1343b)). The latter means that even the independent cinemas that refused to stand down in the face of the GoP's threats will now not be able to show the movie – and in an even weirder aside to all of this, those that planned to show Kim Jong-il-baiting *Team America: World Police* as a replacement for *The Interview* will now not be able to see that either, after Paramount got cold feet and withdrew that from circulation too ([tinyurl.com/MotI1343c](http://tinyurl.com/MotI1343c)).

These are indeed strange days for Hollywood. Personally, in all our years, we can't recall events quite as strange as this surrounding a mainstream film – and certainly not one that was pulled so quickly in the face of threats. It's not a stance that many critics are happy with ([tinyurl.com/MotI1343d](http://tinyurl.com/MotI1343d)), and Sony's outright capitulation to the demands of hackers is seen as setting a very dangerous precedent. By the time you read this, you may well know exactly what the reality of the threats to release more information on the company over Christmas actually entailed. We can only guess right now and ruminante on whether the accompanying terror threats were really credible enough to completely justify the shutdown (there are no plans for DVD or VoD release as we write). Maybe, as some are suggesting ([tinyurl.com/MotI1343e](http://tinyurl.com/MotI1343e)), it really was just a cowardly move to claim insurance money ([tinyurl.com/MotI1343f](http://tinyurl.com/MotI1343f)). Time will tell.

Still on Sony but rolling back to the point we made last week about the difference in reaction to the handling of its hacked information and the Celebgate pictures, Reddit caused a furore this week by closing down the r/SonyGOP subreddit and banning Redditors linking to files from it ([tinyurl.com/MotI1343g](http://tinyurl.com/MotI1343g)). While we can understand why this would happen – especially in the face of direct legal threats from Sony – it's an interesting contrast to the way the site handled the fallout of the iCloud breach. Generally speaking, not a great look ([tinyurl.com/MotI1343h](http://tinyurl.com/MotI1343h)).

## .AVWhy? Videos For Your Eyes... Not Necessarily For Your Brain

Micheal Bay's Transformer films may be more famous for their explosions than their philosophical musings, but it would seem that Megatron has something he wants to get off his chest – specifically, his distaste for selfie culture, social media, the digital native generation and "ridiculous furred hoodies". And he used YouTuber L Tavy as the target for his ire when she had the gaul to try to grab a snap with the leader of the Decepticons. You know what? A career in politics probably beckons ([tinyurl.com/MotI1343p](http://tinyurl.com/MotI1343p)).



You may remember the Spamhaus DDoS that was billed as the biggest denial of service attack of all time. Though many people scoffed at claims that it bought the web to its knees, the size was quite staggering – as was the fact that police believed it to be the work of a 17-year old from London. Well, according to security expert Brian Krebs, that teenager (previously identified as 'Narko' but now known to be Sean McDonough) pleaded guilty.

In an interesting article ([tinyurl.com/MotI1343o](http://tinyurl.com/MotI1343o)) Krebs looks back at the attack, and offers some theories as to who may have been behind it, positing that McDonough was a hacker for hire bought in to do the job at someone's behest.

**O**ver the last couple of weeks we've talked a lot about Zoe Sugg, a social media star whose first book, *Girl Online*, quickly became the best selling debut fiction book in UK history, and who then got wrapped up in something of a furore about exactly how much of the book she actually wrote herself. However, rather than mulling over the rights/wrongs/whatevers of that again, we thought it would be good to pick out another online phenomenon that has broken out into old media in the past year.

He (well, presumably 'he') is the quite wonderful, though not always safe for work, Jim'll Paint It ([tinyurl.com/MotI1343i](http://tinyurl.com/MotI1343i)), a bristolian artist (who is probably not actually called Jim), who has filled his life and our timelines with his MS Paint-ed interpretations of audience-requested scenes of surreal grandeur (a 'typical' example being: "Dear Jim, Please can you paint me Jim Bowen and Bully making a break for it in the Bullseye speedboat... perhaps in a *Thelma And Louise*-style leap to freedom?", which you can see at [tinyurl.com/MotI1343j](http://tinyurl.com/MotI1343j)). Having quickly attracted attention on social media in 2013 ([tinyurl.com/MotI1343k](http://tinyurl.com/MotI1343k)) an interest further fuelled by a selection of newspaper name-checks noting the hyper-nostalgia of his 90s references, not only did 'Jim' get his first art show last year ([tinyurl.com/MotI1343l](http://tinyurl.com/MotI1343l)), he also released a 'collected works' book, aptly called *Electric Dreams*, along with a quite wonderful range of other merchandise using his art, via his online shop, which you can find at [jimllpaintit.bigcartel.com](http://jimllpaintit.bigcartel.com).

In our humble opinion, though, nothing he has ever done – or maybe ever will do – can match the sheer majesty of his Postman Pat/Breaking Bad crossover *The One Who Knocks... Twice*. Jim, or whoever you are, we salute you, and the fact you almost certainly didn't get someone to ghost-draw all of this for you.

## Aaaaaaaand Finally...

While it's customary for Team Meanwhile to ruminate on the year gone with Google's Trends video (now called *A Year In Search* ([tinyurl.com/MotI1343m](http://tinyurl.com/MotI1343m))), we're going to save some of that for next week. We're also wanting to look forward a bit, however, but, considering it didn't see the mobile or tablet booms coming, one wonders what credibility Microsoft's crystal ball has left and why Bing's having a go at guessing search trends for 2015 ([tinyurl.com/MotI1343n](http://tinyurl.com/MotI1343n))? Place your bets, ladies and gentlemen.



We make no secret of the fact we love cats, but in spite of that, we always have time for a dog with specs, like the one we left you to caption two issues ago. Let's see what you made of him:

- **JayCeeDee:** "I've tried the gesture control on this Windows 8 laptop, but it only gives me the Paws function!"
- **doctoryorkie:** "No wonder Rover went bust."
- **doctoryorkie:** "New You Tube CEO concerned about cat videos."
- **gregb49:** "Surely the Beagle Glass contract is worth more than 3 cans of Lassie?"
- **wyliecoyoteuk:** "The HMV mascot realised he should have got a better agent."
- **Thomas Turnbull:** "Netbook, pen, paper and glasses I'm ready to start my dog training class."
- **Chris Park:** "New laptop released: the K9."
- **Nev Warner:** "The new boss is barking mad."
- **Terry Martin:** "Rover reads the restraining order from the postman."
- **Ed Winslet:** "I don't know how to fight, but my best friend is a boxer."

Thanks for all your entries, and well done to this week's winner, Ian McCarthy, who came up with "Jack Russell-Barking, the creator of Puppy Linux."

To enter this week, head to the 'Other Stuff' section of our forum ([forum.micromart.co.uk](http://forum.micromart.co.uk)) and say something funny (but not too rude) about the picture below or email us via [caption@micromart.co.uk](mailto:caption@micromart.co.uk).

# Instagram Outstrips Twitter

## Somewhere, Zuckerberg is beaming

The now Facebook-owned Instagram has reached a mighty 300 million monthly users. That's significant, not least for having bettered Twitter's 284 million monthly active users which is a fact that will have no doubt warmed Mark Zuckerberg's cockles, with his firm having acquired Instagram for \$1bn earlier this year.

It's taken four years for it to reach this impressive figure and now Instagram is going to make some alterations to

improve the service further. Prime among them is the deactivation of spam accounts to stop them cropping up in follower counts. Good, good.



# Facebook Ceases Bing Results

## Revamp dumps Microsoft engine

Facebook has announced that it's stopped including results from the Bing search engine via its site as part of a revamp of its search offerings. As part of that revamp Facebook is using its own search technology for exploring Facebook content, and a company spokesperson was quoted in the press as saying: "We're not currently showing web search results in Facebook Search because we're focused on helping people find what's been shared with them on Facebook" while clarifying its "great partnership" with Microsoft.

Fact is that Mark Zuckerberg wants to at least take a look at search going forward, with over a billion search queries already taking place on Facebook rather than search engines. This is a good start.



# Snippets!

## **Microsoft Bitcoin Okay**

Bitcoin funds can be now added to Microsoft accounts for enabling digital purchases from its stores. That covers Windows, Windows Phone, Xbox Games, Xbox Music and Xbox Video.

The support for Bitcoin, which is a US-only thing at the moment, can add fixed dollar amounts to accounts, with no direct purchases, and up to \$100 can be added at any one time. Support comes courtesy of payment processing startup BitPay.

## **Xbox One Tops PS4**

Yes, you read that correctly people: it's taken a while, but Microsoft's Xbox One console has finally bested Sony's PS4 by becoming the number one selling console for November. The PS4 was on top for around a year so this achievement does need to be put in some sort of perspective – but hey let's not dampen Microsoft's joy.

Reasons behind the turnaround for the month? A price cut can't have hurt while its pre-Christmas bundles might have helped somewhat, too.

## **Chromecast Welcomes Guests**

Google is only too proud to announce that its Chromecast dongle now comes with a Guest Mode feature, allowing anyone with an Android device to cast to a TV as long as they're in the same room.

Yes, they don't have to connect to your wi-fi first and to set this up, users have to first open up the Chromecast app on their Android tablet or phone and then follow the instructions – useful for a social gathering, to see how this works, pay a visit to [chromecast.com/guestmode](http://chromecast.com/guestmode).

# EE Ends Orange Wednesdays

## **Noooo!**

If you're an EE customer, we recommend you get your weekly fix of movies in now, as Orange Wednesdays is going to end very soon.

The cinema promotion, first started up by (of course) Orange before it became EE, is coming to an end after a decade of allowing customers to take a friend to the cinema with them for a mid-week treat. The reason, according to

reports, is because EE's partnership with Cinema First has hit problems – which is something of a shame. We love a freebie here at Micro Mart Towers (who doesn't) and in these difficult times, we're sad to see this promotion go to the wall.

So, get your flick fix by 25th February, EE customers. Or perhaps we should say BT customers in the near future, because...

# BT In EE Talks

## **£12.5bn deal mooted in titanic telecoms takeover**

Should BT's proposed takeover of mobile network EE go through as intended, it would give the telecoms giant a firm, powerful grip on the mobile market too. The proposed amount of money involved in the exclusive acquisition talks, £12.5bn to be exact, came off the back of its consideration of buying O2 from Telefonica, with BT noting various "synergies" between it and EE.

This merger would lead to a company with such a potential stronghold on the telecoms market – BT would effectively be able to offer a quad-play service of broadband, TV, mobile and landline – that it wouldn't be

inconceivable to imagine the regulator getting involved at some stage. There will doubtless be concerns from both BT and EE's rivals about such a deal and customers too might be less than pleased at having less competition within the market.



# Amazon To Deliver Wider Same Day Service?

## Global plans referred to by job listings

**A**ccording to some job listings released over in the US, Amazon is apparently looking into the potential of same-day deliveries on a global scale.

Not only is it looking to bring this for its own deliveries, it's also considering a same-day service for sales from third-party merchants via its site and multiple listings for senior executive roles at its headquarters back up the reported plans.

According to one listing, its "long-term vision is that customers can order and receive a sellers' product the same day anywhere in the world", and while there is no detail on when the company is going to go ahead with this, it does already offer a same-day delivery service in various US and UK cities for a high fee.

If this is true, expect Amazon to carry on with its global domination – and may I, for one, welcome our new retail overlords.

# Repricer Express Says “Sorry”

## Penny glitch puts companies under pressure

**A**s the rest of us were busy wrapping presents and adorning our houses with decorations, Amazon Marketplace businesses were cursing Irish company Repricer Express for selling their stock for a penny via the e-commerce firm.

Repricer Express said that he was "deeply sorry" for the problems, but that didn't help the sellers who were affected by this pretty massive error in its repricing tool that changes the cost of items for sale automatically to keep listings competitive. Amazon

responded to the reports by confirming that it cancelled most orders after the error was found, but seeing as the penny problem occurred over an hour, it wasn't quick enough for all suppliers.

At the time of writing, Amazon was going to contact affected sellers, though if it will compensate is unknown. This high-profile incident will have surely damaged the reputation of the company's Marketplace service in some quarters.



# Linux Bug Found By Kaspersky

## Turla has been sitting there for years

**P**oor old Linux. Having suffered from bugs already during 2014, Kaspersky has now revealed that a piece of malware has been bothering Linux for years. The Turla malware (otherwise known as Ouroboros or Snake) is purportedly government-sponsored malware, that could have come from Russia, and Kaspersky states that it's been infecting Linux systems for a long time, allowing attackers to run commands. Eek.

and film to give them more “respect”

# Blizzard To Bring Hearthstone To Android

## Card game to gain new fans

**R**eleased in 2014 for Windows, OSX and iPad users, Blizzard's Warcraft-themed card game *Hearthstone* is now available for Android tablets and is coming to Android/iOS phones in 2015.

Blizzard has also handed out some free Classic cards for gamers to celebrate the Android launch, and game

progress will be shared across all devices. The website to read up more on the game itself is [us.battle.net/hearthstone](http://us.battle.net/hearthstone).



# REVIEWS

## MSI GTX970 Gaming 4G

A top-performing graphics card that takes our breath away

### DETAILS

- Price: ~£270
- Manufacturer: MSI
- Website: [goo.gl/Yy2yct](http://goo.gl/Yy2yct)
- Required spec: Windows Vista or later, minimum 500W PSU, PCIe x16 3.0 expansion slot



▲ The MSI GTX970 Gaming 4G performs magnificently



▲ It's certainly an impressive looking card as well

It's always a pleasure to receive the latest gaming graphics card through the post and to peel away the packaging and unwrap a thing of beauty encased in an anti-static foil bag. It's the simple joys that get us through the day.

Imagine our delight, then, when we pulled the MSI GTX970 Gaming 4G out from its box. With the two elaborately designed and MSI-badged 100mm downdraft fans positioned atop a huge nickel plated copper heatsink, with four heat dispersal pipes winding through the aluminium fins, this card immediately impresses.

Beyond the design we have 4GB of GDDR5 memory, a default core clock speed of 1114MHz, memory clock speed of 7GHz and HDMI, DisplayPort, DVI-I and DVI-D outputs. The Nvidia Maxwell architecture delivers sixteen streaming multiprocessors, 2048 CUDA cores and drinks up a healthy 145W of power. All of this would generally be enough to pique the interests of the gaming fraternity. However, through the use of the MSI Gaming App you're able to overclock this card to a mouth-watering 1140MHz or underclock it to a more sedate, but silent, 1051MHz core speed. You could probably go even higher should you so wish, as MSI have included overclocking

through the Gaming App in the warranty. Experimentation is certainly on the cards then.

The twin Frozr V fans work independently of each other and are remarkably quiet in their operation – even when the Overclock mode button was clicked in the Gaming App. The temperature too never ventured much beyond the 65°C mark and the design of the card makes for a better airflow through and around the fans and components. To add to that, the GTX970 is slightly slimmer than the average dual-slot card. This enforces the better airflow and helps keeps

the card cooler when set up in an SLI mode. When seated on the motherboard it looks quite sleek and there's also an LED-lit dragon and MSI logo on the top corner of the fan mounts.

Not only does this card look the business, it performs magnificently. The 3DMark 11 score of 15610 for the graphics, and a combined score of 11190, blew Radeon R9 280 off the score charts completely. *Battlefield 4*, at 1920 x 1080 in Ultra Settings managed an average Frames Per Second of 76. *Skyrim* at 1080, 8x AA and with the Ultra Settings and High Resolution



Texture Pack installed averaged out at 150FPS. *Watch Dogs* at 1080 with everything at the maximum graphical level scored an average of 71FPS.

Suffice to say this is a graphics card that can play anything you want to throw at it in the highest resolutions, probably without even breaking into the digital equivalent of a sweat. Imagine having three of these teamed up in a three-way SLI setup.

MSI has pulled out all the stops with the GTX970 Gaming 4G. Not only is it a hugely impressive card, but it's also encouraging users to tweak it – and doing so is exceptionally easy using the MSI management software. For around £270, we also think it's also reasonably priced considering the massive impact this will have on your system.

This is a solid weapon of choice for any gamer. It offers superb performance, features and stability as well as overclocking potential. Certainly one to consider when upgrade time approaches.

**mm David Hayward**

**A superb performance graphics card, with overclocking potential and plenty of oomph**



# Belkin Wemo LED Lighting Starter Kit

**Belkin's world of Wemo plants some spring bulbs early**

## DETAILS

- Price: £80
- Manufacturer: Belkin
- Website: [www.belkin.com/uk](http://www.belkin.com/uk)
- Required spec: Wi-Fi router and smartphone or tablet running Apple (iOS 6 and higher), Android (4.0 and higher), and Kindle Fire (3.0 and higher).

**B**elkin has been slowing building its Wemo range, and this is kit pretty much defines what people expect when you talk about 'home automation'. It provides a couple of Wemo LED 60 watt equivalent bayonet cap bulbs, and the critical Wemo Link box to enable them to be controlled.

The Link provides a bridge to connect the bulbs to your local wi-fi, reducing the technology needed in the actual bulbs dramatically. Technically, I think it uses a form of Xbee to facilitate communication with the Link, which in turn uses wi-fi to connect to the rest of the universe.

Once you've got the Link unit to see them and a wi-fi network you can then use the iOS/Android Wemo app to turn them on and off, dim, and even program them to come on at certain times of the day or based on other triggers.

What's slightly strange is that there isn't a web interface to use from the PC, even though the devices can talk to the internet. I know this because they're compatible with IFTTT ("If This Then That"), even if Belkin hasn't yet released the firmware upgrade to unhook that specific feature.



After using these for a while, I become aware of good and bad sides to these devices that are well worth knowing before investing. The positive side of the kit is that it provides two very nice bulbs, each with a 23 year lifespan (based on three hours use a day) that you can easily control with a smartphone or tablet.

The dimer can be adjusted in 1% increments, and rather than turning off they fade down rather slickly.

My issues are to do with how the conventional light switch controls can entirely scupper them, because once a light is off at the switch, it isn't possible to make it light up. Belkin do make a Wemo

light switch, but to use these bulbs exclusively you need to turn them on at the switch and then control them using the app. That's fine to a point – but what happens when someone unfamiliar with the system comes into the house and wonders why the lights won't switch on from the switch?

In this respect the Wemo bulbs seem a really nice idea, but don't actually play well with the way that lighting is electronically wired in our homes. Then there is the price.

Nearly £80 does seem rather steep for a couple of lightbulbs, even in 2015. The bulbs themselves cost about £25, and you can add more using the Link box in this kit. An equivalent dimmable LED bulb from OSRAM would cost you about £15, so the Wemo control adds about a tenner to the cost of each one.

If I was going to make that level of investment throughout the house I'd need more justification than its cool technology, even if I can see some amazing possibilities. When the lightbulbs are on IFTTT as promised, I may well feel differently about them.

**mm Mark Pickavance**

**A glimpse into the automated home of the future**



# Seagate NAS Pro 4-Bay

Seagate goes fishing in the small business server pond

## DETAILS

- Price: £852 16TB (LambdaTek)  
£354 Diskless (Span.com)
- Manufacturer:  
Seagate
- Website:  
[www.seagate.com/](http://www.seagate.com/)
- Required spec: Wired Network
- Part No:  
STDE16000200



**H**aving recently reviewed the new Seagate 2-Bay NAS, I was curious to see how its 4-Bay Pro model compared. I'd found the basic NAS to be a little underpowered, and Seagate had suggested that the Pro might be more to my liking.

The storage options available on this equipment 4TB (2x 2TB), 8TB (4x 2TB), 16TB (4x 4TB) and 20TB (4x 5TB). The review model came with 16TB installed, and with that capacity, using Seagate's own 4TB NAS HD drives. For those interested, Seagate also makes a two and six bay variants of this design so you can have as little as 2TB or as much as 30TB being distributed.

Setting up the 4-Bay Pro was a familiar exercise, because the Debian based NAS OS 4 is identical to that of the 2-Bay NAS. The interface is the same, the options are the same; it is unrelentingly uniform.

That's not necessarily a bad thing, though. Given that it might well be office managers with no IT training setting this hardware up, it's all very straightforward.

The NAS Pro has one primary function, to serve files, and it seems well specified for that job. Where the entry level NAS seemed to just have enough power for its purpose, the NAS Pro has bags of go under its small black shiny exterior. Instead of

ARM power, Seagate used the new Intel 'Silvermont' C2338 Atom, a fully 64-bit CPU with dual cores that runs at 1.74 GHz.

When coupled with 2GB of DDR3 RAM, the performance jump between NAS and NAS Pro is startling. This box just about floods a single gigabit Ethernet channel, delivering 100MB/s writes and 115MB/s reads on Windows SMB access. As it has dual network adapters, I suspect on a channel bonding switch the total throughput would be roughly doubled. That speed should be able to handle a 50-person office of file requests without choking on the numerous file movements even at buy times of the day.

There is so much power, I'm inclined to think that what this hardware is really

built to do is deliver multiple services alongside file serving. Unfortunately at this time there are only six installable apps on this OS, although Seagate has promised that additional ones will be arriving shortly.

The bigger problem with this equipment is the pricing, because the difference between diskless and pre-configured storage is almost negligible. Usually you get a bonus by buying NAS with drives, but there isn't any here.

Even more problematic is the Netgear's RN10400 ReadyNAS. That costs roughly £655 for 16TB using identical Seagate NAS HDD 4TB drives. What's more, as good as Seagate NAS Pro 4-Bay is, it needs at least a year to mature.

With a wider selection of apps and a more competitive price, it would be a serious contender.

**mm Mark Pickavance**

**Powerful NAS box solution for small businesses**

## Seagate STDE100 NAS Pro 4-bay Specifications

- Processor: Intel Atom C2338 (2C/2T Silvermont x86 Cores @ 1.74 GHz)
- RAM: 2 GB DDR3 RAM
- Drive Bays: 4x 3.5"/2.5" SATA 3 Gbps HDD/SSD (hot-swappable)
- Network Links: 2x 1 GbE
- External I/O Peripherals: 2x USB 3.0, 1x USB 2.0



# Samsung Xpress M2022W

**It is all black and white for Michael Fereday, who is checking out a Samsung laser printer?**

## DETAILS

- Price: £67
- Manufacturer: Samsung
- Website: [www.samsung.co.uk](http://www.samsung.co.uk)
- Required spec: 933MHz processor, 128MB RAM, 1.5GB HD



**D**espite the popularity of multifunction (or all-in-one devices), there is still a market for stand-alone printers, especially when it comes to laser units – whether of the colour or monochrome variety. One printer falling into this category is the Samsung Xpress M2022W, a monochrome laser printer that offers the user a choice of USB or wireless connectivity.

In its closed state, the printer is fairly compact with dimensions of 178 x 215 x 332mm (W x D x H). A little extra space will be required once the paper input flap and output support arm are extended at the front of the unit with the paper path taking a U-bend route from input to output.

At the top of the printer, positioned just to the right of the paper output bay, is the unit's small control panel. Oblong in shape, this panel features a power button and a second one labelled WPS. This WPS button can provide access to features such as setting up a wi-fi connection and printing different types of report or a screen image depending upon the duration of the button press. There are also a couple of LEDs providing feedback regarding toner and general status issues by displaying different colours.

When setting up this printer, as mentioned earlier, you have a choice of USB or wireless connectivity. A wizard on the supplied CD will lead you through the steps required. Opting for a wireless connection, which is meant to offer a choice of Direct or USB assist, I discovered that I was unable to select the Direct route as its check box would not accept a mouse click. As a result I had to use a USB lead for the initial set-up. This is not the first time I have encountered this problem with a Samsung printer.

Once the initial wi-fi connection has been established, the USB assist lead can be removed. If, for any reason, you need to change the wireless set up then Samsung has included an Easy Wireless Setup utility on the CD along with the necessary print driver and Easy Printer Management.

The print driver supplied with this unit offers the user a range of options selected from a tabbed interface. You can choose from various types of print jobs, select portrait or landscape orientation with single or multiple pages per side of

paper. You can also select from various paper sizes and whether to add a watermark or overlay.

Samsung has rated this printer as being capable of producing 20ppm. I was able to duplicate this figure when printing a single-page 594-word document and a second document made up of two pages printed side-by-side on a single page. Switching to an image, the page rate dropped to 17ppm. Print quality was of a reasonable standard although text shaded images in my tests.

As is becoming increasingly popular, the Xpress M2022W supports NFC technology. A clearly marked area on top of the printer can be used to initiate a Bluetooth link between the printer and a mobile device. The smartphone or tablet will need to have the free Samsung Mobile Print app installed. Documents can then be sent from the mobile to the printer to produce hard copy. A quick check of the Internet revealed that replacement toner cartridges for this printer are available for £22.49 from Amazon.

**mm Michael Fereday**

**A compact, economical printer with reasonable print speed and NFC support**



# HP Officejet 5740

Mark assesses HP's new multifunction office friendly inkjet

## DETAILS

- Price: £129
- Manufacturer: HP
- Website: [www.hp.com](http://www.hp.com)
- Required spec: Windows 8/X/7/Vista, 1 GHz (32-bit or 64-bit) processor, 2 GB available hard disk space, CD-ROM/DVD drive or Internet connection, USB port, Internet Explorer



Multifunction office printers usually have all the styling of a breeze-block, so I was pleasantly surprised when the well-rounded HP Officejet 5740 turned up. Having been an IT Manager once, I have a very ingrained aversion to inkjet printers in the workplace, but HP has managed to pack plenty of functionality into what is a relatively inexpensive device.

Along with printing, the 5740 can scan, copy, print Web pages and Fax (don't, please), and it can be spliced into an existing network infrastructure using either wi-fi or 10/100 Ethernet. The scanner occupies the whole top section of the unit, and it incorporates a 25 sheet document feeder. Scanned images can then be sent to a remote PC, attached to an email or pushed on to an inserted SD Card/USB flash drive. HP kindly bundles IRIS OCR in with this printer, so scanned pages can be turned back into editable documents relatively easily.

The scanner isn't anything special, but it's more than adequate to support the copy and Fax functions that are also offered by the 5740. It

doesn't support capturing transparencies or have any film adapter, but at this level of kit I'd have been surprised if it had.

speed of 12ppm mono and 8ppm colour – though those speeds don't seem to include the local processing of image data that the Officejet must

While the print speed might not break any records, the results are crisp and colours are bright. It is also quiet in operation and it will print to the edge of the paper.

Where I have an issue with this design is the control interface that HP has built into the printer so it can be operated without a PC. I'm not sure where HP sourced the touch screen it's used, but it needs to be bigger, clearer and require less forceful finger jabbing to get a response. Often, I would select an option, see the button invert under my finger, but not generate the desired action. Other occasions it worked fine.

Also, this touch interface only offers a subset of what the printer can do when PC controlled – and there's often no obvious reason for the

**66 While the print speed  
might not break any records,  
the results are crisp 99**

It also seems unable to work out what is a document and what is the scanner, as it almost never identifies the extents of a scanned image. This leaves many files containing additional white areas that need to be trimmed.

Printing is reasonable speed for an inkjet, with a quoted

perform. My testing revealed that 10ppm is a more accurate number when dealing with text documents, and 4-5ppm f is about right for colour graphics. However, it can get really slow if you print duplex, as the printer adds a drying delay before printing the second side.



difference. For example: when scanning, the touch interface only offers JPG and PDF file options, whereas PC initiated scanning allows for PDF, BMP, JPG, GIF, TIF and PGM formats. Why? Who knows?

I get the feeling that if the screen had only been a little bigger it might have been substantially more useful, and perhaps included extra features. There is a large border around it on the printer, part of which has been subverted as an NFC hot spot. Even if this increased the cost marginally, a bigger screen with a better sensor could easily revolutionise this design into something much slicker.

Another area where this design rubs this reviewer the wrong way is (predictably) in the ink cartridge department. This is one of those designs where the three coloured inks are contained in a single reservoir, almost guaranteeing that it will be thrown away with unused ink in it. This wouldn't be a problem if the amount in them wasn't so low to begin with: just 4.5ml in the colour (1.5ml each), and 4ml in its black counterpart.

HP will happily sell you XL sized cartridges, that hold 11.5ml and 12ml respectively, for roughly the price of two original carts. However, even using XL packs at roughly £50 for one of each, the 5% coverage page printing cost

– though the vast majority of businesses that use them simply don't.

There were things to like about the Officejet 5740, like the elegant hiding place for the USB and SD Card ports, and the admirable

**66 It could have been better,  
especially in respect of the  
ink resource management 99**

of around 10p for colour or 4p mono doesn't make this printed output cheap by anybody's standards.

If you are deploying this hardware you might want to consider that the person furthest away from the laser printer might always use this instead. And, you also need to ask yourself if you should be encouraging physical copying, faxing and other anachronisms of the digital age?

I accept that some businesses, for whatever reason, do need these facilities

print quality. Though, these highlights are overtaken by the aspects where it could have been better, especially in respect of the ink resource management.

Those who don't print often, but want a printer that does it all, be attracted by this design. They just need to be mindful that, should their circumstances change and their print demands increase, this isn't ideal if you're generating more than 100 pages per week.

**mm Mark Pickavance**

**A well designed printer, twinned with an average scanner, that uses expensive ink**



# Ace Utilities 5.8

If your PC is bogged down with file clutter and registry problems, clean it up and optimise it with this toolkit

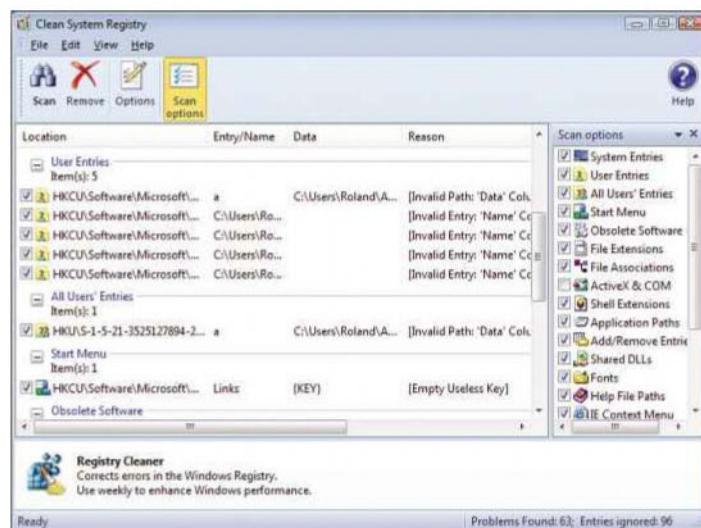
## DETAILS

- Price: £21
- Manufacturer: Acelogix
- Website: acelogix.com
- Required spec: Windows XP, Vista, 7, 8, 1GB RAM, 1GHz processor, 20MB hard disk space

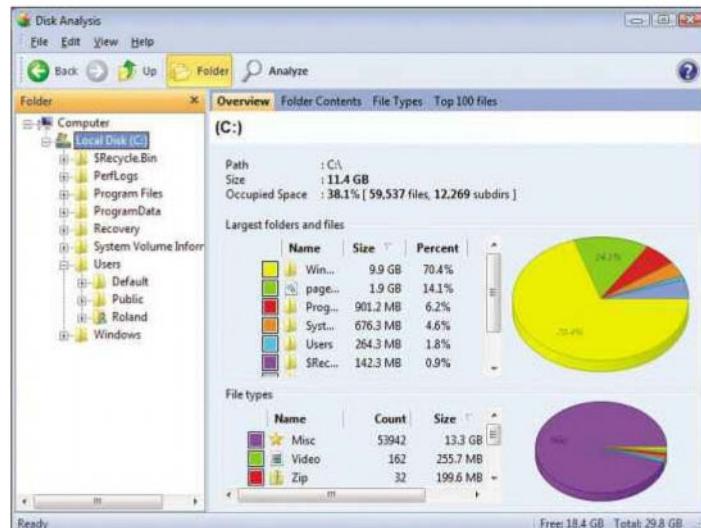
Windows runs fine for a time, but sooner or later it begins to slow down because of the build up of junk files, unnecessary registry entries and errors, log files, invalid shortcuts, startup programs and software. It is inevitable and frustrating, but fortunately there is no shortage of clean-up and tune-up tools to remove the junk and optimise the system. Ace Utilities does exactly that.

The main screen is plain and straightforward, probably a bit too plain compared to some other utilities in this category. However, it is very easy to use. To the left there are four categories of tools: CleanUp, Optimise, Shredder and Miscellaneous. There is also a Wizard button at the top allowing you to run a selection of clean-up tools with just one mouse click. However, it is best to configure the tools before using it for the first time so you know exactly what it is going to do before clicking that button.

Ace Utilities can scan the disk to look for junk files. There is a long list of file types like temporary files, and you can add your own file types or use the Default and Emergency profiles with preselected types. There is also an editable exclusion



▲ All the usual tools are present like disk, history and registry clean up.



▲ The range of features and functions is good and this disk explorer is nice.

list consisting of folders not to clean, and the option to delete files permanently, send them to the Recycle Bin or to move them to a folder you specify.

The other options are typical of many of the clean-up tools – such as a duplicate files finder and a registry cleaner. By setting exclusions and moving items to a backup folder you can browse the deleted items before they are really deleted, undo anything

that should not have been done and so on.

The function to erase your Windows and browsing history is similar and, as with other tools, there is a Cookie Manager that enables you to specify any cookies that you don't want to delete because they are useful. Ace Utilities goes further and has a Smart Exclude Cookies feature that automatically protects cookies that are useful, such as

those associated with Google, Microsoft, LinkedIn and others. It also erases cookies for Chrome and not just Internet Explorer.

An Uninstall Manager removes software and fixes broken uninstallers. A shredder can be used to securely delete files and also erase free space on a disk where previously deleted files might be lurking and are recoverable. Four different secure deletion methods are available including the popular, but unnecessary Guttmann.

There is a nice Disk Analysis tool that scans the drive and then presents the folders as a tree structure. You can select a disk to view a pie chart showing the disk usage for each folder, then drill down into sub-folders to view usage, finally coming to files themselves. Other views include file types (like images or videos) and the top 100 biggest files. It is useful for determining where disk space is being used the most.

Ace Utilities is a good disk clean-up and optimisation utility with many more features than mentioned here. The range of features is good and there are plenty of tools. However, this is a very competitive area with lots of rivals that are equally good.

**mm Roland Waddilove**

**A good collection of tools, but faces stiff competition from similar utilities**



# PNY Wireless Media Reader

**Michael experiments with wireless streaming to Android devices**

## DETAILS

- Price: £50
- Manufacturer: PNY
- Website: [www.pny.com](http://www.pny.com)
- Required spec: n.a.



The PNY Wireless Media Reader is a playing card-sized device that allows you to share media content to various mobile devices. This functionality is achieved by the PNY product creating its own wi-fi network. Mobile devices joining this network will first need to have downloaded the PNY Wireless Media Reader app in order to access the data.

The PNY Wireless Media reader features connection options for standard and micro USB plus an SD memory card slot. Flush to the top of the unit is an on/off button positioned alongside three LED lights that provide feedback as to the status of the internal 2000mAh battery that powers this device, WAN and wi-fi features. PNY supplies a micro-to-standard USB lead, microSD to SD adapter, draw-string carry pouch and a folded sheet of instructions that has a very small font size. In fact, I had to use a magnifying glass to read it..

A full battery charging session can take up to four hours, which might seem a little excessive. However this can give you at least 4.5 hours of streaming capabilities to multiple devices. A three second depress of the power button will start the devices boot-up routine as a password-protected wi-fi network is created. This can then accept mobile devices, such as tablets and smartphones of either the Android or iOS persuasion. Unfortunately those

operating on the Fire platform are not currently supported.

Like similar personal wi-fi network devices, the PNY Wireless Media Reader does not possess its own built-in storage capacity. This is where the standard USB and SD memory card slot comes into play. By attaching a USB flash stick and/or memory card containing the media content you wish to stream to connected devices, you create your own storage.

Accessing this content is carried out via the PNY app. Initially this content will be displayed as folders appropriately named SD\_Volume1 and USBDisk1\_Volume1. You can drill down using standard procedures to find the content you want. There is a search facility, but this is limited to just the main folder level rather than specific files that may be buried deeper.

As not everybody attached to the PNY network will want to access the same media files, each user can opt to access different items. I was able to set up five Android devices that each displayed a separate movie simultaneously. It is also possible to mix music and video files for the attached audience. With the five Android devices located within the same room, I was unable to detect any break up in the streaming signal during a test period of over 4.5 hours of continuous running.

As well as providing streaming capabilities to multiple devices, the PNY kit also features an option allowing connected devices access to the Internet. I was able to browse various websites and download an app on to an Android device. You can also use this product to act as a standard SD card

SD/MicroSD/USB



reader when it is attached to a computer using the supplied lead or as battery charger for a smartphone or tablet. When used as a card reader or battery charger you do temporarily lose the wi-fi functionality.

**mm Michael Fereday**

**A compact device providing streaming options to multiple devices**



# GROUP TEST

## Graphics Cards Under £35

You may be led into thinking that a graphics card that costs less than £100 is incapable of dishing out lovely visuals, but you'd be wrong. In fact, we have six cards that are under £35, and David Hayward has put them through a number of test to see which is best for the budget system builder.

### Graphics Cards Under £35

#### MSI N210 1GB

##### DETAILS

- Price: £17.99
- Manufacturer: MSI
- Website: [goo.gl/sBMYlo](http://goo.gl/sBMYlo)
- Required spec: PCIe x16 2.0 slot, 300W PSU minimum

and has a maximum theoretical resolution of 2560 x 1600.

You get VGA, DVI and HDMI across the single slot backplate, with the VGA port being connected via a ribbon, so if needs be, you can disconnect it and shoehorn the card into a smaller case. And with it drawing only around 31W, you can get away with having this installed in a system with a minimum 300W power supply.

There is some overclocking potential, through the MSI Afterburner overclocking utility, and with this card being MSI designed, you get military grade solid capacitors and components of better than usual quality. Having said that, don't expect to push this card too much. At most, you'll get another 5% improvement without things becoming too unstable, unless you're an overclocking guru and have ample cooling at hand.

In terms of gaming use, the more modest titles will be able to play through with GPU on medium settings without too much difficulty, and depending on the game you could possibly stretch to the higher settings. Lower the settings and you'll certainly get a more playable game

**A**lthough you would, these days, associate MSI with the higher end of the graphics card industry, it does sell a more reasonably priced range of cards. The performance values of its low-end range are several orders below cards like its GTX970, but you'd get change from a £20 note here.

The MSI N210 is probably its cheapest card on sale at the moment. At just £18 or thereabouts you get a card with an Nvidia GeForce 210 GPU based on the 2009 core architecture. This particular version is the second-generation G210, which was originally based on the Nvidia Tesla GT218 but with a few extra megahertz added here and there for good measure.

As the title suggests, you get 1GB of DDR3 memory running at 1GHz, as well as a core clock speed of 589MHz. It has a 64-bit memory bus, 12.8GB/s memory bandwidth



with higher frames per second. More modern and demanding games will struggle, though. Things like *Skyrim*, *Watch Dogs* and *Assassin's Creed Black Flag* will be pretty much unplayable, even when the settings are reduced significantly.

However, the N210 makes for an excellent desktop graphics card. The normal Windows functions are well within the scope of this GPU, and you'll be able to get away with image and video processing without having to wait too long for everything to render. Obviously, the more intense the rendering, the longer it will take.

As a media centre card, the MSI N210 is perfectly acceptable. Playback of 1080p HD content was fine, without any noticeable signs of the content struggling.

For under £20, this is a great budget graphics card. The quality of components is superb, and it's more than capable of being housed in a media centre or standard PC.



◀ It's an ideal budget media centre card

## MSI HD5450 1GB

### DETAILS

- Price: £19.98
- Manufacturer: MSI
- Website: [goo.gl/hkbsZq](http://goo.gl/hkbsZq)
- Required spec: PCIe x16 2.1 slot, 400W PSU

While we're still looking at MSI's low-end cards, we thought it was best to include its entry-level AMD card, the HD5450.

This is a Radeon HD5450 card with 1GB of DDR3 memory running at 1066MHz – somewhat faster than its rivals. Combined with a 650MHz core clock speed and a maximum resolution of 2560 x 1600, with support for DirectX 11 and CrossFire, this is certainly a more promising-looking graphics card – even more so when you can pick one up for a mere £19.98.

It is an entry-level Radeon HD5450, though, but with a better memory bandwidth of around 11.5GB/s, and it's faster than other 1GB HD5450 cards. The Asus version's memory speed, for example, runs at just 600MHz, and the Evergreen version is just 400MHz – a significant drop from the AMD specified memory speed of 800MHz.

This extra boost in speed is thanks to the better components that MSI puts into its products, and it does make a difference. So essentially, this is an already slightly overclocked product but not enough to make too much of a negative impact on the state or lifespan of the card itself.

It's a successor to the Radeon 4550, and on paper there's not a lot of difference between the two, other than



▲ It's a good general card but lacks punch when playing video



▲ For basic gaming this card is okay

**66 There were some noticeable tear lines in more intense action sequences 99**

the newer 40nm manufacturing technology (over 55nm on the 4550) and the inclusion of HD audio through the HDMI port. The manufacturing has dropped the power consumption by a fair amount, which in turn gives MSI the ability to ramp up the

clock speeds slightly. The result, of course, is a better than average HD5450.

This is a single slot card, with HDMI, DVI and VGA available on the backplate. The VGA ribbon connection, as with the N210, can be removed, and MSI has even

included a low-profile bracket for if you decide to fit this into a media centre type case.

Gaming, as before, isn't brilliant, but it's better than the N210 example we tried previously. Most of the games could reach the medium to high settings, with some of the more demanding games being relatively playable in the lowest settings. As it happens, we managed to get both *Skyrim* and *Assassin's Creed Black Flag* running in the lowest settings. It was difficult at times to play, but the card managed it nonetheless.

Also as before, normal desktop duties are perfectly fine, as are photo manipulation and video editing. Interestingly, we were expecting better video playback or at least the same as the N210, but for some reason the HD5450 didn't like the HD content we were feeding it.

There were some noticeable tear lines in more intense action sequences, and some artifacting when resuming from pause. We also found DVD playback to be a little jerky at times and Blu-ray playback was nearly impossible due to video lag.

In theory, the MSI HD5450 should have been better than the N210 in every aspect, but in practice it didn't behave quite as well. Depending on your use for the system, you may be better off with the cheaper N210.



## Graphics Cards Under £35

### Gigabyte GT610 1GB

#### DETAILS

- Price: £27.99
- Manufacturer: Gigabyte
- Website: [goo.gl/V0hFwq](http://goo.gl/V0hFwq)
- Required spec: PCIe x16 2.0 slot, 300W PSU minimum



▲ The Gigabyte GT610 is a great all-round graphics card



▲ The heatsink is very large, so check the slot it's going into before buying

#### 66 DVD and Blu-ray media

played well, and streamed HD

content wasn't a problem 99

There's not a lot of room at the bottom end of the budget graphics card market.

The GPU that dominates this range is the G210, with each manufacturer offering a slightly better package than the last. However, the difference is when we start to approach the £30 mark, and the G210 begins to drop off in favour of the GT610.

The Gigabyte GT610 has 1GB of DDR3 memory at 1200MHz, with an 810MHz core clock speed. It uses the 40nm manufacturing process of the Nvidia optimised GeForce119 core and is capable of dishing out a memory bandwidth of roughly 15.1GB/s.

Essentially the G610 is a much improved GT520, which itself was regarded at the time as being one of the best performing graphics cards for gamers. The increase from the maximum 900MHz of the GT520 means there's a lot more to be had from this card than the previous group entries so far. Add to that the fact that it uses only around 30W, and you could easily have a very capable system GPU for just £27.99.

This is a single-slot card, with VGA, DVI and HDMI ports available, but there's a slight problem if you're fitting this into an already cramped space. Since this particular model

is the silent version, which means no fans, the heatsink is exceptionally large and protrudes from the heatsink mount on the card and can interfere with the adjacent PCI slot. Saying that, you can be certain that the Gigabyte GT610 is suitably cooled, which isn't a bad thing.

We found the Gigabyte GT610 to be quite an

impressive card. Every game we tested worked reasonably well; *Assassin's Creed Black Flag*, *Skyrim*, *Minecraft* with umpteen mods and *Sniper Elite 2* all ran with excellent frames per second when the medium settings were applied in 1920 x 1080. If we opted for a 720p resolution, then we could up those settings slightly without too much of an issue. Naturally,



more modern and demanding games will need something with a lot more performance; the likes of *Crysis 3*, for example, may not even run at all, but on the whole the GT610 is an excellently priced gaming card.

As before, normal desktop duties were performed without any issue, and thankfully the media side of things was handled with without the problems we found in the last card we reviewed. DVD and Blu-ray media played well, and streamed HD content wasn't a problem either. It's worth mentioning that despite having support for Nvidia 3D Vision, the GT610 didn't perform all that well when watching 3D media. It was a little blurry and not as well defined as cards we've seen in the past. Then again, that's 3D, so 99.99% of us won't give two hoots whether it works or not.

To conclude, the Gigabyte GT610 is a great all-round card. For just £27.99 you're getting a card that's good for most older games and great for everything else. The only real thing to take into consideration is the very large heatsink and how it will affect the space it's fitting into.

## XFX R5 230 1GB

### DETAILS

- Price: £28.49
- Manufacturer: XFX
- Website: [goo.gl/8ggZZ1](http://goo.gl/8ggZZ1)
- Required spec: PCIe x16 3.0 slot, 400W PSU minimum

The AMD Radeon R5 GPU was something we missed out on earlier in the year when it was first released. Since it was the entry-level product, most users opted instead for the more powerful and feature-laden R7 series.

This is an XFX R5 230, a GPU that's found somewhere between the R5 220 and the R5 235 and is based on the Caicos Mobile platform, as opposed to the better Terrascale 2 Caicos PRO platform. This particular version is the low-profile core edition, with the same 625MHz core clock speed as the rest of the R5 230 family, but with 1GB of slightly overclocked 1066MHz memory instead of the more traditional 533MHz.

At its core is the rebuilt Radeon HD8450, which in turn was a boosted Radeon HD6450. The point is that despite the new R-series branding, the 230 isn't much of a performer compared to the previous higher HD8xx series of cards. In fact, you'll be lucky to get over 9.5GB/s out of the memory bandwidth.

It is, though, quite light on power demands, using only 19W max. This of course means you can install it in a lightweight system, with the added bonus of it being low profile to begin with. But despite the advertising, there are some limitations that you should be aware of.



▲ Despite the higher price, the R5 230 isn't as good as the other cards on test



▲ There are some serious bottlenecks on this card

**66 There was noticeable  
tearing across most of the  
HD films 99**

On paper, the R5 230 declares that it's ready for 4K gaming and also 3D gaming, which is a little odd, as the same specification shows a maximum resolution of 2560 x 1600, which obviously isn't 4K. However, regardless of what the specification sheet dictates, there's absolutely no way you're going to be

able to play anything worthwhile at 4K resolution on this card. That said, we did expect it to run the usual mix of games to some decent degree. As it turns out, we were quite wrong.

The slightly more demanding games we tested (*Assassin's Creed Black Flag* and *Skyrim*) didn't play well at all, even

when the graphics were turned down to the very lowest levels. Likewise, lesser resource hungry games struggled slightly too. *Minecraft*, for example, didn't perform as well with this card as it did with the N210, and it showed nowhere near the same ability as the Gigabyte GT610.

Most of the desktop duties were handled well enough, although the image manipulation was notably slower, as was the video rendering. As for video playback in a media centre environment, the R5 230 didn't do at all well. There was noticeable tearing across most of the HD films, DVD stuttered slightly and Blu-ray viewing was next to impossible.

The XFX R5 230 1GB comes in at around £28.49, which makes it 50p more than the far superior Gigabyte GT610. In fact, the far cheaper N210 and HD5450 performed better all-round than the R5 230 did, and they're nearly £10 cheaper.

To sum up, if you're going to spend nearly £30 on a graphics card, then you're better off with any of the selection we've mentioned so far. The R5 230 just wasn't up to the task, unfortunately.



## Graphics Cards Under £35

### MSI HD6450 1GB

#### DETAILS

- Price: £29.08
- Manufacturer: MSI
- Website: [goo.gl/j505mG](http://goo.gl/j505mG)
- Required spec: PCIe x16 2.1 slot, 400W PSU minimum



▲ Gaming was good, as were desktop duties, but Blu-rays didn't like being paused



▲ The best AMD card so far

Unless you're in a hurry,  
there shouldn't be too much of  
an issue

It's a strange thing where a more modern GPU can be based on a previous generation of GPU and perform worse than the original model. That's the case with the R5 230 and the Radeon HD6450. As we said in the last review, the R5 230 was based on the HD8450 that was an improved HD6450, but for some odd reason this older card outperforms it.

This is the MSI HD6450, with a core clock speed of 570MHz and 1GB of DDR3 memory running at 1000MHz. The GPU is an entry-level 40nm Terrascale 2 first-generation model, which was later rebadged and appeared as a Radeon HD7450 and then boosted to provide the Radeon HD8450's core GPU. It's a good workhorse and one of the main AMD GPUs that helped keep Intel on its toes during 2011/2012.

The MSI version of this card has boosted memory speed by a good 200MHz, with a slightly slower but more stable 570MHz clock speed – as opposed to the OEM GPU model that clocked up at around 600MHz. The result is an improved card over the OEM flavours, and of course with this being an MSI build, the usual higher grade capacitors and other components have to be taken into account as well.

The card is priced at around £29, although you may be

able to find it slightly cheaper if you shop around, and for that you get about 13.3GB/s memory bandwidth, 160 shader processing units and DirectX 11 support. It chews up roughly 30W of power, but it's a passively cooled card with a surprisingly small heatsink.

You get VGA, HDMI and DVI ports along the single slot backplate, and due to this being a high-profile card there's unfortunately no option to fit it into a low-profile slot and case.

We were really quite surprised by the performance of this card in our tests. The

gaming side of things was really very good, with the demanding games in our collection being playable at lower resolutions and the lesser demanding games running perfectly fine in high resolutions. To a degree, the MSI HD6450 was on a par with the Gigabyte GT610, although the GT610 was slightly better to our eye.

As you would expect, the normal desktop duties were good enough for the average user. Photo manipulation was adequate, as was video editing and some rendering. The GPU did strain under the pressure of slightly more demanding video work, but unless you're in a hurry, there shouldn't be too much of an issue with it.

Media centre capabilities were more than ample. The streamed HD content was perfectly acceptable without any hint of a struggle, as was DVD playback. Blu-ray playback did cough and splutter slightly when brought to pause but if kept going was watchable.

The MSI HD6450 is probably the best AMD budget card we've tested so far. Its performance was good, and you could easily get away with some middleweight gaming. Media was good too, but it's too large a card for a compact media centre.



## MSI GT720 1GB

### DETAILS

- Price: £33.24
- Manufacturer: MSI
- Website: [goo.gl/nl7mbs](http://goo.gl/nl7mbs)
- Required spec: PCIe x16 2.0 slot, 400W PSU minimum

The final card in this group is yet another MSI product, the GT720 (or N720 if you take the MSI coding system).

There are two versions of the GeForce GT720 core: the DDR3 and the GDDR5. This is the DDR3 version with 1GB of 1600MHz memory and a core clock speed of 797MHz. The architecture is built on the optimised 28nm manufactured Kepler GK208 core, which offers some improvements over the other graphics cards in this group.

This particular version is low-profile and passively cooled, with the usual mix of military grade solid capacitors and other higher-quality components. It's also reasonably priced and still under our £35 target at £33.24, and you can probably pick one up for less if you shop around.

There's a significant improvement with this card compared to the other GT720s that are on offer. The memory speed, for instance, is on average around 700MHz faster, and with it being passively cooled, the power consumption is reduced to about 22W. There's also support for DirectX11, a maximum resolution of 4096 x 2160 and 192 shader processing units to play around with. The result of this is a low power but extremely capable graphics card for a



▲ The MSI GT720 is a great sub-£35 graphics card



▲ It can handle almost everything you can throw at it, and it's great for media centres

**Unless you really can't go beyond £20, this is the graphics card to get**

very reasonable amount of money, one that can shift 15.4GB/s memory bandwidth. The GT720 was able to run all of the games we tested; we even had *Skyrim* and *Assassin's Creed Black Flag* running at medium settings while still being extremely playable. In fact, we even got *Watch Dogs*

running with minimal settings at 19 frames per second with this card. It wasn't the best quality to play at, but it was possible at least.

As you can imagine, the desktop duties were performed without any problems whatsoever, as were photo browsing and

manipulation, along with video editing and other such tasks. For media centres, the MSI GT720 is by far the best choice of graphics card. Not only is it low profile for fitting in a media centre style case, but it's also very quiet, low powered, has VGA (detachable ribbon cable), DVI and HDMI, and it could display any of the HD content, DVDs and Blu-rays we fed it without even breaking into the digital equivalent of a sweat.

Considering the MSI GT720 is only £5 or so more expensive than the previously reviewed XFX R5 230, it's by far the better card in every aspect. The MSI HD6450 was a good card too, but again for just over £4 more, you're better off investing in the GT720.

All in all, unless you really can't go beyond £20, this is the graphics card to get for the maximum budget of £35. There's something for everyone here, and unless you're considering running the likes of the new *Assassin's Creed* game or you want extreme frames per second with the best quality graphics, then you can't go far wrong with the MSI GT720.



EDITOR'S CHOICE

**micro  
mart**



### MSI GT720 1GB

The MSI GT720 isn't the cheapest of the group, but it's still under £35. And what you get for that is an exceptionally good, all-round graphics card that's capable of handling any number of scenarios, especially media centres.

HIGHLY COMMENDED

**micro  
mart**



### Gigabyte GT610 1GB

The Gigabyte GT610 handled everything in the test well enough, and it's priced well too. In the end, though, it depends on whether you prefer the AMD flavour of the Radeon or Nvidia's contribution.

## How We Tested

Each graphics card was fitted on to an MSI Z97M Gaming Board with an Intel Core i5-4670K, HyperX 8GB RAM, HyperX Fury 120GB SSD and Corsair 850W PSU.

The games we tested were *Assassin's Creed Black Flag*, *Skyrim*, *Minecraft* with nine mods loaded, *State of Decay*, *Strike Suite Infinity* and *Sniper Elite 2* (the Zombie Army one!). We also tested photo manipulation in Gimp, video editing in OpenShot and media centre playback in VLC, Windows Media Center and XBMC, with PowerDVD for Blu-ray playback.

	MSI N210	MSI HD5450	Gigabyte GT610	XFX R5 230	MSI HD6450	MSI GT720
<b>Price</b>	£17.99	£19.98	£27.99	£28.49	£29.08	£33.24
<b>Platform</b>	Nvidia based	AMD based	Nvidia based	AMD based	AMD based	Nvidia based
<b>Memory</b>	1GB	1GB	1GB	1GB	1GB	1GB
<b>Memory speed</b>	1000MHz	1066MHz	1200MHz	1066MHz	1000MHz	1600MHz
<b>Core clock speed</b>	589MHz	650MHz	810MHz	625MHz	570MHz	797MHz
<b>Memory bandwidth</b>	12.8GB/s	11.5GB/s	15.1GB/s	9.5GB/s	13.3GB/s	15.4GB/s
<b>Shader processing units</b>	16	80	48	160	160	192
<b>Watts used Max</b>	31W	25W	29W	19W	30W	22W

# Tech Origins

## Lossless Data Compression

**David Briddock** examines the history of data compression algorithms

**A**ny efficient communication system relies on some form of data compression. Even Morse code, invented for telegraphy in 1838, used shorter codewords for common letters, such as 'e' and 't' in English. Most communication relies on a lossless solution, where the compressed data can be restored to exactly the same state as before.

### Information Theory

By the late 1940s the information theory began to gain popularity as a science. By 1949, Claude Shannon and Robert Fano had created a systematic method to assign codewords based on the probability that a certain text fragment would occur in any given piece of data. The most popular fragments could then be encoded using just a few bits.

While studying information theory under Faro at MIT, student David Huffman wrote an end of term paper that showed how to build a so-called probability-tree from the top down. This was new approach improved compression efficiency. While, early computers typically relied on hardware and hardcoded text dictionaries to implement Shannon-Fano and Huffman-style encoding, it soon became clear that dynamically building dictionaries in software offered much greater flexibility in terms of what could be compressed codewords by these methods, as it could be aligned with the data contents.

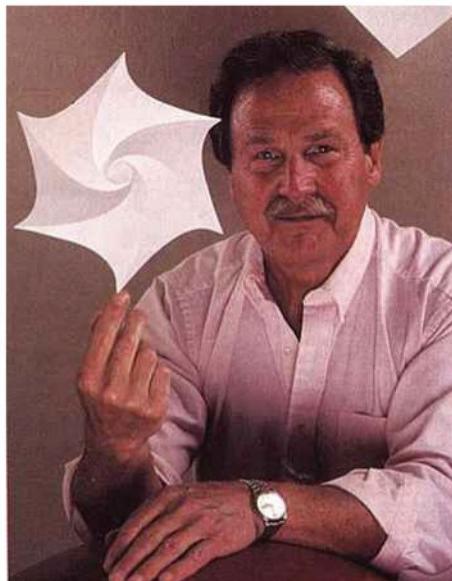
The rapid growth of data storage and Internet usage acted as a catalyst for new compression solutions. In 1977 Abraham Lempel and Jacob Ziv (Lempel-Ziv) published their groundbreaking LZ77 algorithm, the first to incorporate a dynamically generated dictionary. The duo improved this further with LZ78, which went on to combine data parsing with dictionary generation.

### Patent Wars

What followed was a rapid growth in LZ compression variants. Most of these soon died out, but a few are still around today including LZMA, LZX, Deflate and the RAR/WinRAR codec developed by Russian software engineer Eugene Roshal. These survivors tend to be based on the LZ77 algorithm rather than LZ78.

The reason is a LZ78 derivative called LZW, which was patented by the Sperry Corporation in 1984. Sperry then went on an offensive suing vendors, server admins and others who'd used the closely related GIF format. The LZW patent didn't expire until 2003.

Later on, focus shifted to the LZS algorithm developed by Stac Electronics. Microsoft adopted LZS for data compression back in the days of MS-DOS 6.0, under the name DoubleSpace – but it took a ruling finding it guilty of patent infringement (and awarding its Stac \$100 million) before anyone knew it.



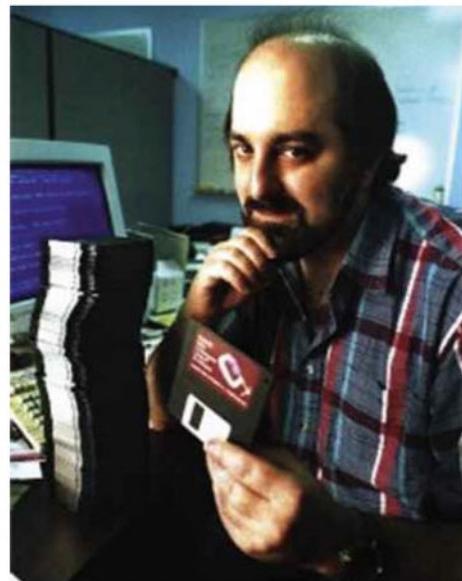
▲ David Huffman

### Deflate

Phil Katz needed to invent a replacement for the troublesome LZW for version 2 of his PKZIP file compression tool. By 1989 he'd created the Deflate algorithm by combining the LZ77 algorithm with Huffman coding techniques. Despite its age PKZIP technology still forms the basis of the now ubiquitous ZIP format. And Deflate is also found in web technology like HTTP and SSL, the PNG graphics standard and some modems and routers.

The UNIX compress utility was also based on the patent-encumbered LZW algorithm. So the community switched to an open source Deflate-based solution called gzip, which is still around today alongside the newer Burrows-Wheeler Transform-based bzip2 format.

Sadly, Katz didn't live long enough to see Deflate take over the world. After struggling with alcoholism for many years he, died from excessive alcohol consumption in 2000 aged just 37.



▲ Phil Katz

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# Google Chrome Tweaks

**We looked at IE and Firefox tweaks and secrets. Now let's take a look at Google Chrome**

There's usually more to your bog standard internet browser than it may first appear, and unless you spend some time looking through the preferences, you may miss out on some useful setting that can help you get more out of your online experience. This is especially true when it comes to security. Recently, we looked at Internet Explorer and found a whole heap of security features that many users may miss if they simply use the browser 'out of the box'. With Firefox, we uncovered a mass of hidden options, some of which we took a closer look at. These options can be used to tweak all aspects of the browser, freeing the software's shackles for those who want to really push its limits.

This week we'll round up our trinity of browsers with Google's Chrome. Google browser has quickly become a major fixture in the browser wars, and with a company that boasts as much internet know-how as the world's biggest search engine creator, it's no surprise really. Chrome is a great application, and many use it as their default internet browser of choice.

Like both Firefox and IE, however, there are plenty of settings to play around with in Chrome, which let you take more control over your internet use. Unlike IE, which is a lot more restricted

and locked down, Chrome, like Firefox, also has a hidden section packed with options and settings, which we're going to look at.

As with Firefox, these settings are largely experimental and/or sensitive, so as always, you play with these at your own risk, and you should be aware that some changes may cause Chrome to become unstable or worse. So be sure to back up your bookmarks and other Chrome data before you decide to take the plunge.

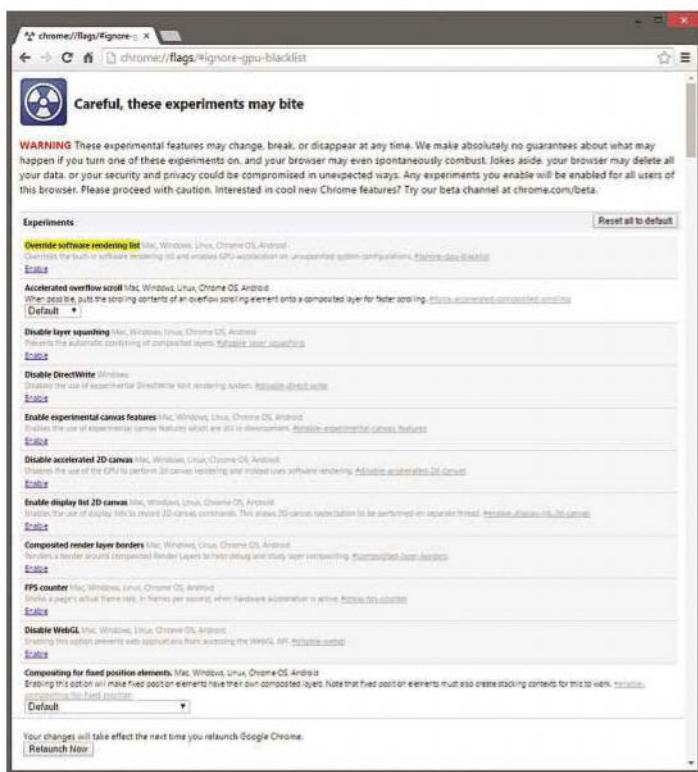
## Careful, These Experiments May Bite

Like Firefox, Google Chrome's secret settings are accessed via the address bar. To open them up, type 'chrome://flags' or 'about:flags' into the bar and press Return. You'll open up the list of tweaks, and you'll also be greeted by the warning. Take heed of this (at least the serious part), and take any precautions before you begin to play around with the options below.

Also take note of the 'Reset all to default' button. This could be a lifesaver if anything you change causes Chrome to become unstable. Simply press this, and all the settings you've changed will revert to the default, restoring Chrome to normal.

Unlike Firefox, where the settings and tweaks are largely unexplained, with only vague names for users to go on, Chrome's list of options is far more readable, with full setting titles and even descriptions. So even if you're not that computer literate, you'll have some idea of what these options can do.





▲ Chrome's hidden 'flags' settings hide a host of extra options

**66 These settings are largely experimental and/or sensitive, so as always, you play with these at your own risk 99**

Still, even with this information, it's not always clear, so you still need to use caution. Of course, we're going to look at some of these options in more detail here.

There are two types of option here, including settings that are either enabled or disabled and those that have various settings found in drop-down menus. To alter on or off settings, simply click the hyperlink to enable or disable, and to alter those with options, pick one from the list – easy. On or off settings will be easily visible as they change from blue when disabled to white when enabled, so you can see at a glance what's going on. When you change any setting, you'll need to click the Relaunch Now button that appears at the bottom of the Window to apply your changes.

Also note the operating system specified next to each option. This clarifies which platform the setting will work on, so be sure to consult this depending on your current device.

Now, let's start off with a simple tweak that could speed up Chrome's performance quite substantially.

## Flag Waving

**Name:** Maximum tiles for interest area

**Effect:** Performance

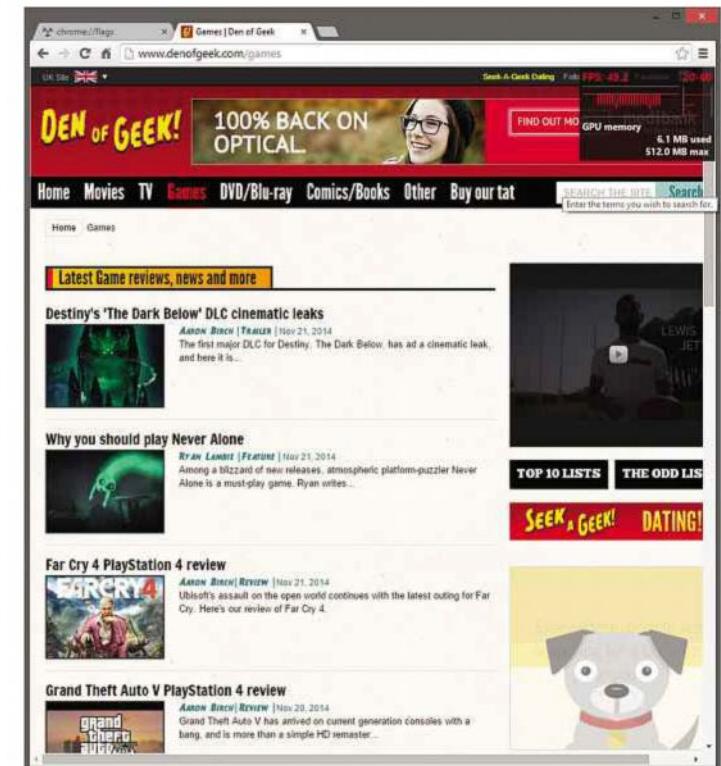
To begin, let's have a look at the setting 'Maximum tiles for interest area'. This can be used to specify the amount of system RAM Chrome uses, with more RAM meaning better performance. To change it, simply select an amount of RAM from the drop-down.

The more RAM your PC has, the higher the amount you can specify, up to 512MB. Most PCs these days can handle this, but be aware that this will prioritise Chrome over other programs, which may run more slowly.

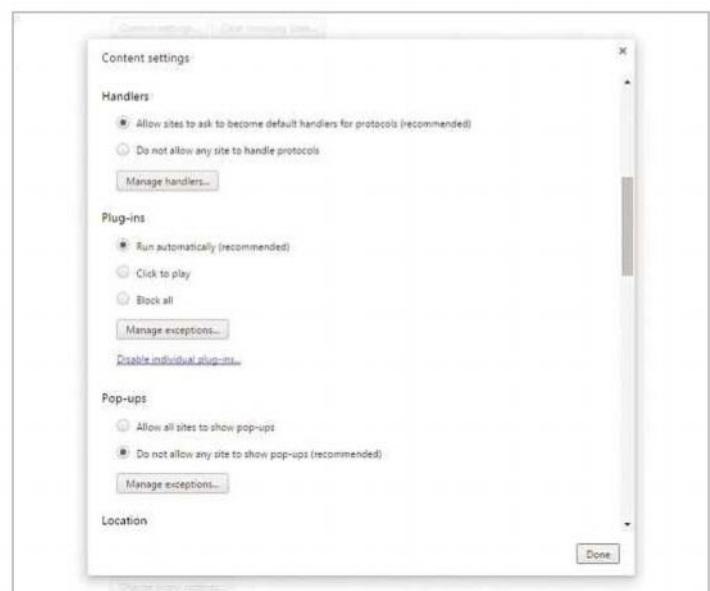
**Name:** Override software rendering list

**Effect:** Performance

This option lets you override, amazingly enough, the software renderer used by the browser. Usually it's limited to tested graphics drivers, but by enabling this option, you can force Chrome to use your GPU hardware, regardless, to accelerate the performance. This could shorten loading times for some content, including videos.



▲ See how well a site performs and how much GPU memory it uses with Chrome's FPS counter



▲ Chrome's content options can be very useful

Index of C:\Windows\		
Name	Size	Date Modified
[parent directory]		8/23/13, 1:36:36 AM
adlms/		8/23/13, 1:36:31 AM
ADFS/		8/23/13, 1:36:30 AM
AppCrash/		11/13/14, 5:33:31 AM
AppPatch/		11/12/14, 1:06:54 PM
AppReadiness/		11/12/14, 4:57:23 AM
assembly/		11/20/12, 2:51:47 PM
ASUS/		1/4/14, 4:16:34 PM
AUInstallAgent/		8/23/13, 1:36:31 AM
Boot/		9/2/14, 10:00:48 PM
Branding/		11/13/14, 5:33:31 AM
Camera/		11/19/14, 2:02:38 PM
CbsTemp/		8/23/13, 1:36:35 AM
Curvs/		7/13/14, 4:23:03 AM
debug/		8/23/13, 1:36:36 AM
DesktopTileResources/		8/23/13, 1:36:30 AM
diagnostics/		1/4/14, 5:26:25 PM
DigitalLocker/		8/23/13, 1:36:44 AM
Downloaded Program Files/		2/27/13, 9:54:27 PM
ELAMBKUP/		5/15/14, 4:19:13 AM
en-US/		3/19/13, 2:47:58 PM
ev-ES/		11/13/14, 5:33:31 AM
FileManager/		9/18/14, 1:33:38 PM
Font/		3/14/13, 11:20:20 PM
fr-FR/		8/23/13, 1:36:30 AM
Globalization/		1/4/14, 5:26:26 PM
Help/		1/4/14, 5:26:32 PM
IME/		11/13/14, 5:33:31 AM
ImmersiveControlPanel/		11/18/14, 9:31:56 PM
Inf/		8/23/13, 1:36:31 AM
InputMethod/		11/15/14, 1:04:03 AM
Installer/		8/23/13, 1:36:41 AM
L2Schemas/		5/14/14, 5:37:18 PM
LiveKernelReports/		2/27/13, 8:05:21 PM
Log/		6/18/14, 1:11:56 PM
Logs/		1/4/14, 5:37:21 PM
Media/		11/13/14, 5:33:31 AM
MediaViewer/		11/22/14, 3:11:22 AM
Microsoft .NET/		7/30/14, 9:17:28 PM
Minidump/		7/26/12, 6:12:59 PM
ModemLogs/		8/23/13, 1:36:36 AM
Offline Web Pages/		1/1/14, 6:03:08 PM
Power/		

▲ Chrome can be used to browse your local computer as well as the internet

#### Name: GPU compositing on all pages

**Effect:** Not all pages support GPU compositing, but those that do often perform better than those without, and this setting will attempt to force the feature, even on pages that don't support it. This could grant you a boost in speed in many respects. Of course, forcing this could cause some sites to become unstable.

#### Name: Threaded compositing

**Effect:** This is related to the above option and enables a second thread if you have a multi-core CPU. This could improve performance in areas like scrolling and page rendering, as well as other, less visual aspects.

#### Name: Disable accelerated 2D canvas

**Effect:** This setting will prevent your GPU from rendering standard, 2D canvases, freeing it up for more important duties. The task will fall to the CPU instead. This is another tweak that can speed up browsing, especially if you're looking through websites that use a lot of plug-ins, like Flash and Java.

#### Name: Disable accelerated CSS animations

**Effect:** If you're using the above option for threaded compositing, CSS animations will use this secondary thread, and this will grant you some performance increases. It's also been reported that this setting can still speed up Chrome, even if you don't use it with the compositing setting.

#### Name: GPU accelerated SVG filters

**Effect:** This tweak ropes in your GPU to help out with rendering vector graphic filters of websites. This will help when browsing websites that use a lot of vector filters and effects.

#### Name: Disable GPU Vsync

**Effect:** Vsync (vertical synchronisation) is a setting used in many areas of computing, including gaming, which syncs the system graphics card with the monitor. This means that the graphics card

will only output as fast as the monitor's highest refresh rate. When Vsync is disabled, it unshackles your GPU, which can output as fast as it likes.

This setting has the same effects, only for Chrome, and it can be useful for video playback and other multimedia concerns while browsing the internet.

#### Name: FPS counter

**Effect:** This setting displays an FPS counter that shows the performance of a web page, as well as GPU memory used. This is useful for visual-heavy sites and is a good tool for web developers.

#### Name: Enable password generation

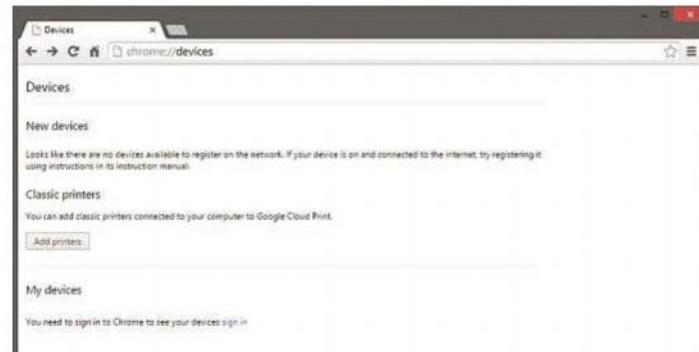
**Effect:** Coming up with new passwords can be a chore for some, and it's easy to lapse into the habit of using the same password for everything. This is obviously not all that secure, and Chrome can help. Using this flag, you can enable a feature that can automatically generate a new password for you when the browser detects a sign-up page. As this won't be anything to do with you personally, it'll be very secure and not easy to guess.

#### Name: Enable touch events

**Effect:** With more people using touchscreen systems, Chrome has a selection of hidden flags for this tech. This one, for example, can be selected to always force touchscreen support when such a device is detected. You may also want to use the options 'Show HUD for touch points' to display that information and 'Enable pinch scale', which allows you to use the common pinch gesture.

#### Extra Settings

As well as the hidden flags we've looked at, there are other settings you can find and use too. For one, you can enter



▲ Chrome can link your printer to Cloud Print via its advanced options



▲ A Chrome add-on lets you access remote PCs

## Nifty Shortcuts

As with any Windows program, Chrome has some very useful key combinations and other shortcuts you can use to make browsing faster and more productive. Let's have a look at a few.

We've all accidentally closed a tab we weren't done with, leading to a rummage around the history. This can be avoided, however, by simply pressing **Ctrl+Shift+T**. This will open the last closed tab, and repeated presses will continue to open tabs in the order they were closed, much like an image editor's undo function. Each tab's history also remains intact, so you can press the back button to navigate through visited sites.

Instead of clicking on each tab with the mouse, you can switch between them by using **Ctrl** and the number keys. 1 is the leftmost tab, and they increment as you move right.

A common shortcut in browsers is present in Chrome. If you need to navigate to a .com address. You don't need to type 'www.' and '.com'. Instead, simply type the domain, such as google, and press **Ctrl+Enter**. The prefix and suffix will be added in for you.

**Ctrl+Left click** will open links in a new tab, just like a middle mouse click. Useful if you have an old mouse that doesn't have a middle button or scroll wheel.

Pressing **Alt+Enter** when entering link will open the new link in a new tab, instead of the current one.

You can hold down **Shift** and click tab titles to select multiple tabs at once. These can then all be closed in one go by pressing **Ctrl+W**. You can also drag all the tabs to another window if you wish.

Google Chrome's address bar (or 'Omnibox') will automatically search for any text entered that isn't a formatted web address. This search uses Google by default, but it can be changed. To do this, right-click the address bar and select 'Edit search engines'. Now select the desired engine from the list or add your own using the other options below.

You can also use the address bar to search Google Drive directly. In the search engine edit box, type Google Drive in the first box, use 'gd' as a quick keyword, and in the last box type '<http://drive.google.com>'.

'chrome://settings/content' into the address bar to see a collection of content-related options.

The section under Plug-ins, for example, allows you to disable such content on websites, both for security and to speed up browsing. You can also select the option that asks you to click to play such content. Be careful if you use this, however, as it can cause some sites heavy on plug-ins to malfunction. If this is the case, use the 'Manage exceptions' button to add sites to the white list. You can also opt to disable website images and JavaScript.

This same content menu can also be used to manage other security features, such as the pop-up blocker and cookies, both also possessing exception lists. You can disable the location option to prevent tracking and deny sites access to your computer for plug-ins. It's a very useful list of items and one that you should certainly check out.

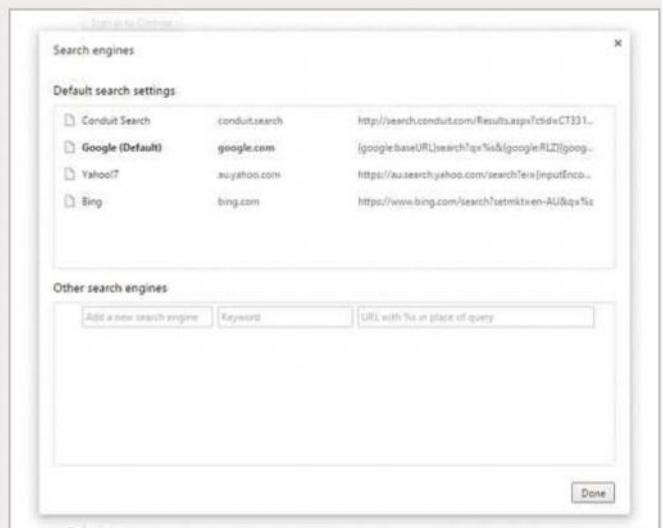
You can use Chrome as a simple file browser, which may be useful if Explorer has crashed. Simply type 'C:\' or any other drive

com/?hl=en&tab=bo#search/%s'. This will add the ability to your searches. You can do the same thing with your Gmail account. Use 'Gmail' as the name and 'gm' as the keyword here, and for the search string, enter '<https://mail.google.com/mail/ca/u/0/#search/%s>'.

As well as typing into the address bar to search the web, you can also search specific sites, such as Amazon. To do this, simply type Amazon or another site name, then press tab and enter the text you wish to search for. This will then list searches on that site.

When you've highlighted text, you can right-click the text and perform a search instantly, instead of going through the usual menus or engines. You can also drag the text to the address bar, and this will kick off a search for the text. Dragging the text to the top of the browser next to the last open tab will also open a new web search and tab.

It's easy to accidentally change the zoom level when browsing, which is done by pressing **Ctrl** and the mouse wheel. This is a useful shortcut, but can be a pain if you use it by accident. To return Chrome to the normal 100% zoom, simply press **Ctrl+0** (zero).



▲ Add your own default search engine to Chrome's address bar

into the address bar, and press Enter. You'll see an FTP-style layout of your drive.

Did you know that you can use Chrome with your printer and connect it directly to Google's Cloud Print? To do this, open Google's settings by typing 'chrome://settings' into the address bar and then click 'Advanced Settings' at the bottom. Scroll down and you'll find the option for Google Cloud Print. Click 'Manage' to set it up.

If you're one of those PC users who's known as the person in the family who's 'up on all that computer stuff', then you'll no doubt spend a lot of time on the phone trying to fix problems. Well, Chrome can help a little here, as it has its own remote desktop tool. You can grab this from [tinyurl.com/dy8ufz8](http://tinyurl.com/dy8ufz8). Once installed (on both machines), the software lets you access another computer via the browser and is very useful for helping to fix problems.

These are just a few of the tweaks and tricks you can employ to speed up Google's browser and get the most out of it. There are even more to be found too, so have a little rummage and see what you find. **mm**



# Are Online Communities Killing Tech Support?

**Mark Oakley** asks whether traditional technical support has been usurped by the online space

**i** Tunes is currently unavailable. Try again later." So for the tenth time or so of trying, my Apple TV refused to load my latest iTunes movie purchase. I had intended to spend the evening watching a film that I'd missed when it was showing at my nearest multiplex. The kids were asleep, my wife was out for dinner with a friend and I had a good stash of chocolate by my side. I was all set, but the last piece of the puzzle refused to play ball. Apple had let me down.

Having tried the usual fixes myself (resets, restores, cables swapped, router resets, cursing under my breath, and so on) and failed to achieve anything beyond giving myself a tiny cut to the little finger on my left hand and causing myself an unhealthy level of stress and anger in the process, I checked online at the official Apple System Status for anything affecting the iTunes service.

Green boxes were neatly positioned next to anything related to iTunes or iCloud. All was as it should be.

## 66 Consumers actively search for advice from other consumers all the time 99

Next, I checked in on Twitter to gauge whether there was any widespread social media chatter about the problem. Nothing. Just a whole lot of general moans about losing the teeny Apple TV remote. Finally, after a few days of my Apple TV failing to play any purchased iTunes content, I went to the one, obvious place any Apple user heads for in a crisis: Apple Support Communities.

### Community Action

For those who don't know, Apple Support Communities is the company's own online support forum, bringing together Apple users from all over the world – usually to have a good old moan.

I quickly found a very small thread or two with a few posts of people with similar problems to mine, but I felt that they didn't fully address the issue in hand. And so I started a new thread, detailing my problem and asking – nay pleading – for help from any willing community members. "Any help/advice would be hugely appreciated. Right now, iTunes Match and Apple TV aren't doing the job I paid for."

Too needy? Possibly, but I was desperate for a solution – being desperate after just a few days is symptomatic of the instant gratification culture we now live in (or else symptomatic of my own impatience).

A week later, and the thread had amassed over 18,000 views and nearly 250 replies. My issue, clearly, was not an isolated case.

I'm happy to report that the problem has also been resolved now (it lasted around a week until the fault, which apparently lay with Apple's authentication servers, was fixed), and I'm relatively impartial about the whole thing. Technology, as we all know, isn't perfect 100% of the time. Errors will happen, and fixes can take a while to come. As it happens, I found a workaround for my problem after the event, and I have enough content options in my abode to keep me occupied while my iTunes content was unavailable. The aforementioned chocolate helped calm me down on the day in question too.

### How Do Online Platforms Rate On Technical Support?

**Social media messaging:** Twitter, Facebook etc.

**Pros:** Instant posts; instant feedback (sometimes); a warm, fuzzy feeling that you're engaging with the modern world.

**Cons:** Instant abuse; no feedback (often); sickly feeling as you realise that the modern world isn't actually all it's cracked up to be; responses are quick fixes rather than comprehensive answers; any interactions will typically end up with you having to contact support via email/phone/direct message anyway.

### Reddit

**Pros:** people are nice and willing to help; lengthier posts allowed; similar problems likely posted elsewhere (possibly with answers to your questions) warm community feeling.

**Cons:** people can also be really horrible; among the genuinely useful responses will be a bunch of probably useless, possibly offensive posts that don't help in the slightest; sometimes, communities should just be left in peace; your post may never be answered.

### User Groups

**Pros:** genuinely knowledgeable members, genuinely keen to promote and develop the topic of the user group; you will likely get an accurate answer to a problem.

**Cons:** a slight inferiority complex for new members; a possibly snippy approach to anyone showing a lack of sufficient knowledge in the chosen field.

### Official Company Websites: Standard How-tos and Q&A sections.

**Pros:** information is clear, concise and to the point; easy to search for answers to your problem; official support; trustworthy, believable solutions.

**Cons:** lack of any real detail beyond the questions answered; no interactivity; "I know all this already!"; "I've tried that and it didn't work!"

What struck me about the experience once it ended, however, was that my first ports of call for advice and help, beyond my own knowledge of routers, hardware, software and cables, were online communities and social media. I didn't contact Apple itself via its live chat system or request a callback for issues relating to my online ID. Instead I searched for advice among the community itself, and it strikes me that this has increasingly become the go-to solution for consumers in these enlightened and well-connected times.

### In It Together

Consumers actively search for advice from other consumers all the time, of course. We do it in the workplace and in our personal lives. Is this CD worth buying? Should I upgrade to Windows 7? Does my bum look big in this? So many of our purchasing decisions are if not based on then at least affected by the opinions of others. We do it to reduce risk, the risk of wasting our money, the risk of making the wrong decision



and breaking a motherboard. I remember when I built my first PC, I headed for online forums for a bit of advice, as I was worried that I was making all the wrong moves. The community was helpful and the build successful. I could have solved my own problem by reading a book or two on the matter or by contacting technical support of some of the manufacturers of the components I was using, but I went online because I wanted to interact with others just like me.

These interactions feel more real, less stuffy. You feel like you can bare your soul more, and that sounding like a noob isn't such a big thing.

Apple's community is an interesting case, because it's an owned online community. Unlike online communities via social media or via generic forums debating Apple issues, Apple's own community is relatively firmly constructed to allow for tighter, less sprawling discussions. With topics and suggested questions the norm, this is – in theory – a polite form of debate.

The most interesting side of what Apple's community achieves (and I'm only using Apple as an example based on my experiences; other online communities are available) is that it provides the company with a means of providing its customers with technical support, without actually having to get involved. During the 16 pages of replies to my original post, several questioned whether or not "Apple actually read these forums?", to which the obvious response is, "No. No it doesn't." In running such a community, but leaving it up to its devoted

followers to manage and respond to problems at will, Apple and companies like it give themselves a platform for handling complaints and for offering customers a basic 24/7 support mechanism but one that, crucially, absolves these firms from direct recourse from said customers.

Why have these online communities become so important? Perhaps it's down to the quality (or lack of) of official technical support.

### They Said What?

Type 'poor technical support' into your web browser, and you'll be met with a variety of responses from consumers unhappy at the level of technical expertise that some of our very tech-y companies exude. There's a well-worn joke, of course, so wonderfully employed by TV show *The IT Crowd*, regarding the best advice for any computer users when it comes to any form of computer problem. While the 'turn it on and off again' comment is a somewhat stereotypical view, it is one that is sadly borne out of a very real problem apparent across some firms.

That's not to say that it's a particularly widespread problem. Indeed, I've had several experiences with router companies, ISPs and component manufacturers that have set me straight. However, I've similarly had experiences that, were I not (relatively) knowledgeable in my field, would have left me completely lost. In these instances, the jargon-heavy, piecemeal

advice was all too confusing and in some cases just plain confused.

Going back to my Apple TV for a moment, a few months ago I had a problem with the installed Netflix app refusing to acknowledge me as a user. I could play content via my PC and various mobile devices but not via my Apple TV. And so I headed for the Support Communities again, only this time there was very little chatter on the issue.

I chose the next best option, in theory: Apple phone call support. Having raised the issue as a problem using my Apple ID, an American voice was on the end of the phone within minutes to help me out. Minutes later, and with the problem unresolved, I placed down the handset receiver. What had panned out over those few minutes was a very untechnical support call, ironically. Guess what the advice was. Restart. Reset. Sign out. Sign in. Use a different monitor. Choose a different cable. All scripted options, all things anyone with a rudimentary understanding of technology would have already tried.

## 66 Type ‘poor technical support’ into your web browser, and you’ll be met with a variety of responses from consumers 99

A live chat support interaction with Netflix was no better. Exactly the same advice, the scripted responses bore no relation to any of the questions or issues I was writing down. Despite the Americanised “Well, how are you today?” tone of the support, I just left frustrated and no better off for going through the official support platforms.

In the end, it was the Support Communities that identified the fault as being with Apple: after a few weeks, someone noted a call with Apple and informed anyone reading that the problem did indeed lie with the company, something I subsequently confirmed with Netflix.

With the online community coming up with the answers that the company itself can’t (or in some cases the company acknowledges a problem weeks after the online communities have raised it), Apple is a prime example of how an organisation can utilise its loyal followers to provide an overall better service.

### Taking Advantage Or Just Good Business

Returning to that question for a moment, of whether Apple reads the forum posts, under the Terms of the Use Agreement, “Apple may respond to questions but does not formally provide technical support on the Site. Any information that is provided by Apple or Apple employees is offered on an ‘AS IS’ basis without warranties of any kind.” The same terms also note that Apple does not screen submissions, nor does it endorse any views expressed on the site.

Apple, then, is effectively using its name alone in the running and upkeep of the site, leaving it up to the community to look after itself. Interestingly, the following line would seem to suggest that some of the most active respondents are perhaps paid for their work: “Apple may offer you benefits and award privileges for your participation in the Site. The benefits and privileges provided do not create an employee,

### Should You Ever Pay For Technical Support?

With online forums and communities so prevalent, is it ever worth paying for technical support? Retailers and big brands will offer technical support, sometimes paid-for, sometimes under a catch-all annual policy.

I’ve paid for similar policies in the past for white goods, completely by accident as I was young and befuddled by what I was signing. I’ve never once taken advantage of such a policy, but that’s not to say that you haven’t. Maybe you’ve breathed a sigh of relief as a costly phone call or annual policy has saved some important work or saved you from having to replace expensive technology.

So when is it worth it? If you have access to friends, family or a neighbour with any technical knowledge at all, I’m not convinced that it ever is, really. Certainly, these are the primary options to consider before going down the paid-for route. It also very much depends on your problem. For example, paying money for a phone call on how to set up a computer or other hardware seems a bit silly when these days they typically come with very simple, clear instructions and are largely preconfigurable or plug-and-play anyway. You’d often be better off buying a Guide for Dummies or just getting on the internet. The information is out there for free.

There are caveats to all this, which is to say that if you’ve ever been better off because of a tech support plan, you’ll appreciate their value. If you’re someone who has taken advantage of a tech support plan many times over the course of a year, then there is an argument for it. It’s also something that a company has to at least offer to be taken seriously. I’m also not railing against the independent computer repair companies up and down the country that do some cracking work in fixing systems up. These companies, of course, have actual knowledge beyond the ‘reset and restore’ line, and if you have to go down that road, you’ll hopefully be in good hands.

I’m just saying that people should always be aware of what they’re paying for. Not all technical support is created equal.

agency or independent contractor relationship between you and Apple, and you may not present yourself as a spokesperson for Apple.”

I do believe that these communities would benefit from input from representatives from the company itself. This would create a stronger bond between user and company as disgruntled users would feel that they were being listened to.

I’m all for online communities in the provision of much-needed support. They’re generally friendly spaces with a wealth of information, and if you can’t find what you need on one of them, you’ll more than likely find it elsewhere on the web. Have they grown at the expense of traditional technical support? To an extent, yes, and the internet has helped to fuel that growth, but technical support in some shape or form will continue to exist.

It’s just that with online communities and forums so readily available, they’re always going to be the first port of call. **mm**

# Sandboxing

## What is it, and is it useful?

**Aaron takes a look at sandboxing, a popular security technique used to keep your PC safe and sound**

In your travels online or talking with other PC users, you may well have stumbled on the term 'sandboxing'. It's a term that's thrown around quite a lot online, especially in technical circles, and it's also very popular in business and large scale networking. What exactly is it, though, and is it something you may want to look into? Let's see.

## Play Safe

Simply put, sandboxing is a security measure people use to keep their PCs safe from attack. The actual name, sandboxing, may be a little confusing, however. If you're a gamer, you may consider the term to mean a large, free and open space where you can do whatever you want. It's a common way to describe such games as *GTA*, *Minecraft* and *Skyrim*. In computing, however, it's quite the opposite. Here users create a virtual, restricted sandbox for applications and code to run within. This sandbox is separate from the rest of the system, thus creating a contained and safe place to test out new programs, websites and code. It's a quarantine of sorts, able to prevent any possible attacks that may arise from running unknown code.

This is very important in today's world, where even a visit to

## It's a great way of giving your own home PC or network some rock solid security

the wrong website can cause you all sorts of grief. With various exploits found in things like Java code, it's not always possible to protect yourself from threats, even if you have a decent anti-virus app installed.

With the massive availability of software online, especially freeware and trials, it's also possible to install applications that come with unexpected guests like trojans and viruses. Even if a program is clean, it may still cause problems with compatibility and react badly with your hardware setup, causing system instability.

There are many ways to protect against this, with your own caution being among the best weapons in your arsenal, but with so many back doors and hidden ways for threats to get into your system, a better, more reliable way is needed. This is where sandboxing comes in.

## Any Which Way

There are a few different methods of sandboxing that people employ, with the different options being more suitable for different roles. Not all of these are viable for home use, and some are designed for corporate environments and larger networks.

For example, many IT departments utilise a rule-based method, often using Linux to provide different users various permissions and rules, thereby limiting the amount of users who can perform certain tasks, such as installing software, running code and starting processes. These rules can be applied to programs, as well as people, and they provide a useful framework for controlling computer activity. A similar method is employed by companies using a Microsoft-based domain, with utilities like Active Directory.

Another popular method is to use a 'jail', which is a method of using virtualisation to separate programs into virtual spaces or partitions. Keeping items or even user sessions in separate virtual environments is one way to ensure security. Again, this kind of virtualisation isn't feasible or necessary in the home (in most situations, but there's an app that is, which we'll look at later), but

the tech is the basis for what is arguably the most popular method of sandboxing in the home, and that's virtual machines.

## Virtual Sanity

Virtual machines have been around for a long time, and although server virtualisation is relatively new in terms of corporate infrastructure, compared to traditional physical servers, virtually emulating a stand-alone system is something that's now tried and tested to the extreme. Therefore, it's a great way of giving your own home PC or network some rock solid security.

Using this approach, you employ a virtual machine package to assign a portion of your hard drive to become the hard drive of the virtual PC, specify the percentage of system resources like RAM and CPU usage, and install an OS onto it. Once this is installed, you can boot up the virtual PC, which functions just like a normal PC, only it's all virtual and self-contained. Should anything happen to the system, such as a virus infection, all that's affected is the virtual PC.

This system can be dedicated to any task, such as trying out downloaded software or browsing the internet. As it's basically a software image, it can be deleted and you can start again, no harm no foul. If you back up the original, fresh image, creating a copy of it before you use it, you can simply copy and paste the image back into place and start again. Easy.

It's reasons such as this that make sandboxing such a popular approach to security for many, and even for everyday internet browsing it can be a useful trick. Fortunately, there are many ways to do this, some that require a purchase and others that are totally free.

## Pretend PC

Virtual PC image software is plentiful, and there are many options for you to pick from. Many of these are expensive, with some designed mainly for corporate and other large-scale use, but some are perfectly suited to the home user. Let's take a look at some of these options.

## VMware

One of the most well-known applications in the virtualisation market is VMware. This is one of the most powerful virtual options, but it isn't as home user friendly as it once was, with no real free official version available other than limited trials. However, due to its power, it's still worth considering for many.



▲ VMWare Player can still be found for free and is a very good virtual PC tool



◀ VirtualBox is free and arguably the most popular home VM tool

Once the mainstay of virtual machines, even for home users, it's now the go-to choice for business thanks to its heavy lean towards virtual server farms and large-scale installations. The main website doesn't really offer any free options any more, but you can still find the free VMware Player on various sites, including many software download sites.

VMware Player is a stripped-back but perfectly usable virtual PC program that can be used for home sandboxing, and it's very easy to create multiple PCs with whatever operating systems you need. The only real setback of this program is the high resource use. The overheads for all virtual machines are understandably high, but VMware Player seems to be particularly hoggish here.

## VirtualBox

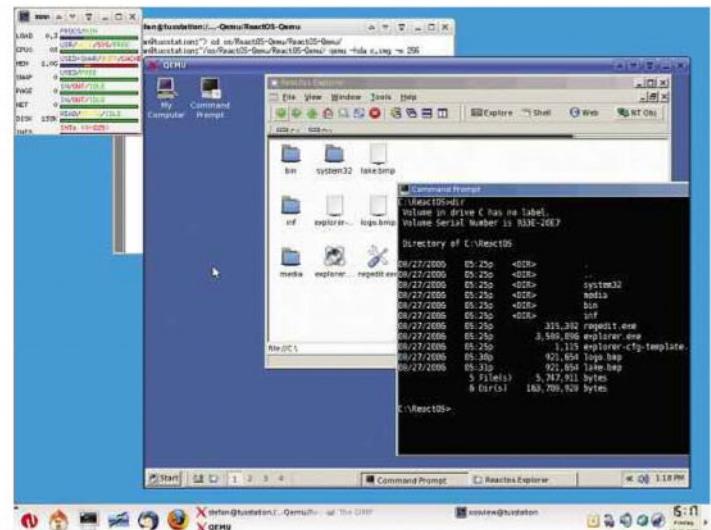
VirtualBox is probably the most popular virtual machine tool for Windows, and it's totally free. Creating machines in the program is easy, and it also features very useful file sharing and drive sharing mechanics. It has full networking support, can be used as an actual test bed, and you can set up the system to function as a jail. There are extensive guides and documentation on the main website ([www.virtualbox.org](http://www.virtualbox.org)), as well as a full user manual.

Although it's one of the most popular options for Windows, as it's free, it's also cross-platform and thus supports both Mac and Linux. Highly recommended.

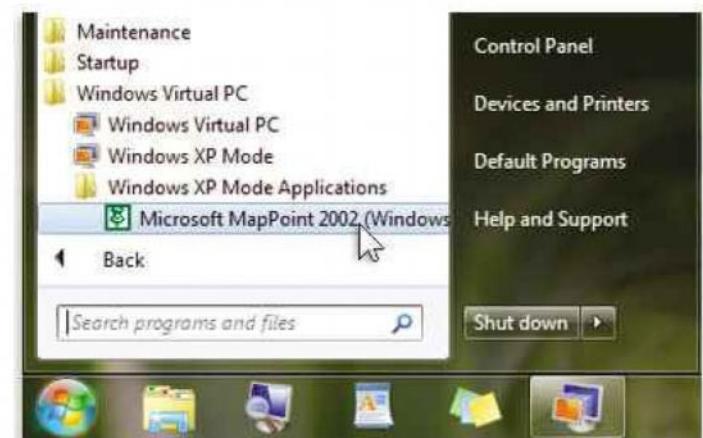
## QEMU

If you're a Linux user and are looking into the possibility of sandboxing via the virtual PC route, then you should check out QEMU ([wiki.qemu.org/Main\\_Page](http://wiki.qemu.org/Main_Page)). This is a free, open-source virtual machine tool. As with many programs of this type, it can be used to run multiple OS installations virtually, and it can emulate other hardware systems, so you can run programs designed for other components.

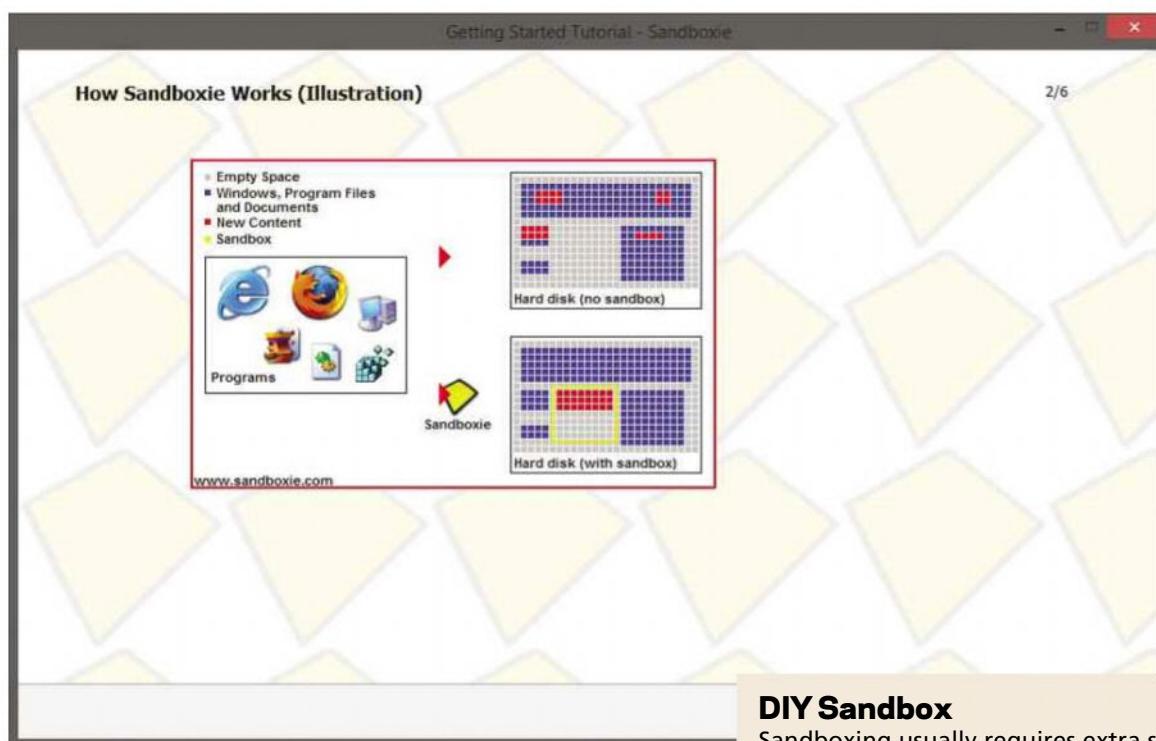
A popular use for QEMU is to emulate Windows, so Linux users can run their favourite OS but still have the option of using Windows-based programs that they'd otherwise not be able to access. In this regard, it's a very useful tool and is also one of the



◀ QEMU is popular with Linux users looking for VM functionality



▲ Windows 7's XP Mode came from MS Virtual PC and, although no longer supported, is a good sandbox option for Windows 7 users



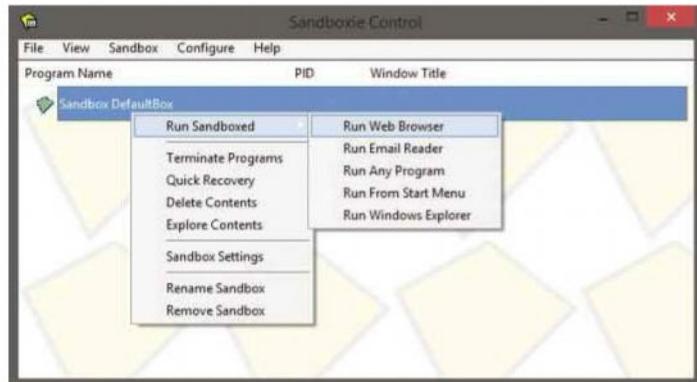
most efficient, with many finding that it drains less of their system's resources than some other virtualisation options.

#### MS Virtual PC

Once one of the most popular virtual machine options, as it was free and had Microsoft behind it, this virtual PC option is no longer all that useful, sadly. With the arrival of Windows 7, the previously free virtualisation package that could create multiple virtual systems was refurbished to function as a free copy of Windows XP for compatibility uses, bypassing any problems that arose from the new OS. Instead of a proper VM app, the system was used to emulate a free copy of XP on Windows 7, allowing users to run their old programs.

Today, however, this is no longer supported. The option isn't available within Windows 8, and Microsoft has posted on its website that it no longer provides support for Windows XP Mode, going so far as to say that it recommends you only use the tool if your PC isn't connected to the internet (thanks to numerous security issues that may be present).

If you're still using Windows 7 and have XP applications you wish to use, this remains a good option, as you can use the XP mode as a sandbox, keeping your Windows 7 system safe and sound.



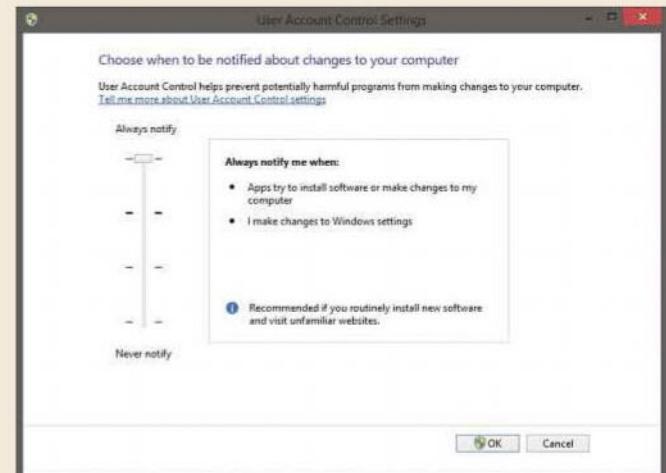
▲ You can quickly run browsers and email via preset options

#### DIY Sandbox

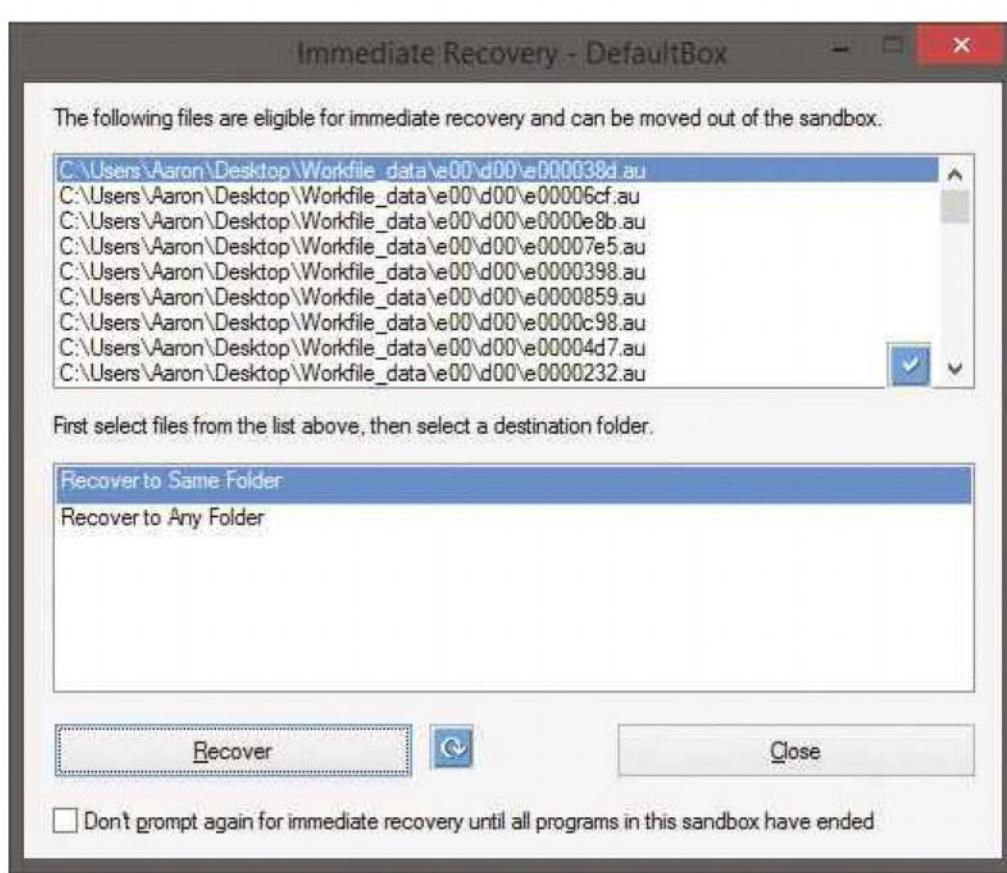
Sandboxing usually requires extra software, such as a virtual PC program, but you can operate your PC with more safety using some basic principles that apply to sandboxing – that is, restricting access to your PC.

This can be achieved by simply running programs as a limited user instead of one with admin rights. This way, no changes can be made to the PC, so programs can't do anything they shouldn't. This won't protect you from any potential viruses, but any attacks that make changes to the system can be prevented. Therefore, it's a good trick to use if you're testing out new software downloaded from the internet.

Windows makes this kind of sandboxing very easy, thanks to User Account Control (UAC). With this turned on, any changes a program attempts to make to your PC are questioned, and you're prompted to intervene. This means you always know what's going on behind the scenes and if a program needs to make changes to or gain access your system.



▲ User Account Control is a variant of sandboxing, restricting program access



**When you create a new file in a sandboxed app, and you'll be able to recover it right away**

## Pros And Cons

That's just a couple of virtual machine apps, and these are very effective ways to sandbox. However, they do have their ups and downs.

On the plus side, there's arguably no safer way to test programs and browse the internet, as the virtual PC is separate from your real, physical computer, and any attacks or problems are contained. It's a great security solution, and if you use a free application, you're golden. Virtual machines even have their own IPs and names, so they can be identified on your network and externally. This all requires a lot of computing muscle, though.

Running a virtual PC within another PC takes a lot of power and resources, and after you've assigned the virtual PC's share of memory, hard disk space, CPU usage and so on, your system will be very busy dividing its resources between the real and virtual system. This obviously means it's not going to be as fast as usual, and you'll notice both the real and virtual PCs aren't going break any speed records.

This is fine if you're not planning on heavy use, but if you need to run powerful apps and don't have a monster PC, you're going to suffer. If this is the case, the virtual PC option may not be the best one for you. There is another option you may want to consider, however.

## Sandboxie

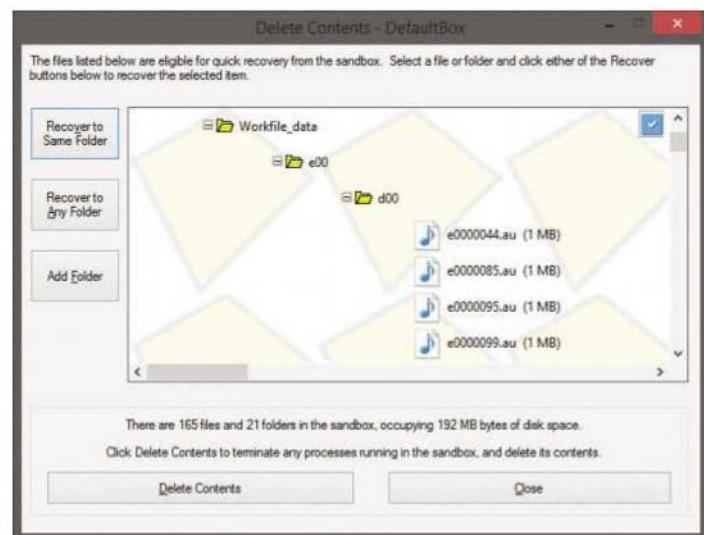
Sandboxie ([www.sandboxie.com](http://www.sandboxie.com)) is an intriguing take on sandboxing, not only in name but in how it works. Instead of virtualising an entire PC, Sandboxie creates (what else?) a sandbox for programs to play in. It does this by isolating a portion of your hard disk and running any applications within it. Programs are unable to make any changes to any other part of your computer, and even things like temporary internet files are contained. As an example, if you run a browser within a sandbox and download a file, it's saved

to the sandbox, and if you want to move it to your actual PC, you have to recover it first. Simple.

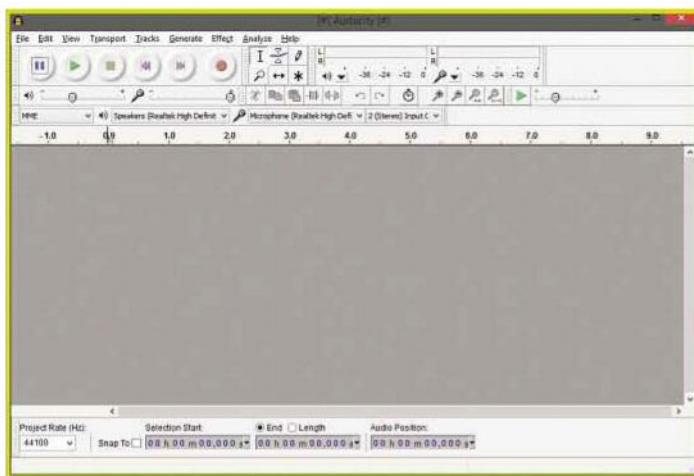
## Using Sandboxie

Let's take a quick look at how to use Sandboxie. First, you'll need to install Sandboxie, and once you've progressed through the initial tutorial, you'll be able to use the program itself. To begin, open the program and right-click the 'Sandbox DefaultBox' option. Here you'll be able to select from a few options, including existing presets and set up your own. To do this, go to the 'Run Sandboxed' option.

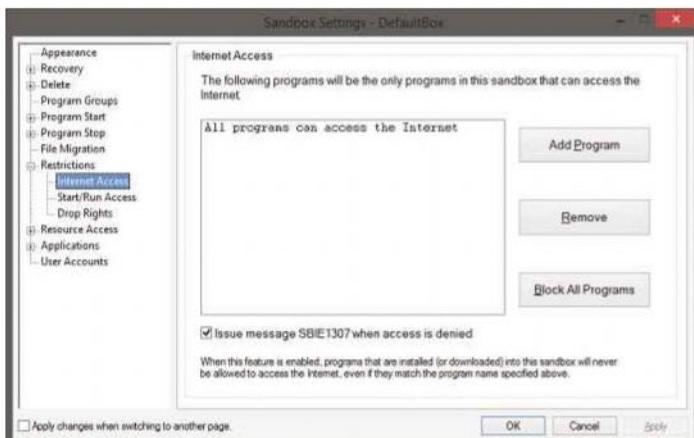
You can select options to run common applications like internet browsers and email. Selecting these options will run your default



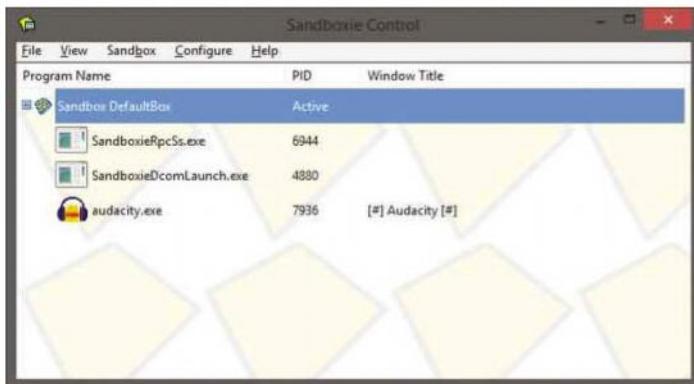
**When you delete a Sandboxie session, you'll be able to recover any files you need**



▲ Programs running within a sandbox have a yellow (by default) border when you roll over them



▲ Sandboxie lets you restrict access to various parts of your PC, and the internet



choices for these apps, which will be denoted by the yellow border (which can be changed), showing that they're Sandboxie applications. If you have a browser already open, Sandboxie will open the browser, complete with any pages and tabs already active. You'll notice that the Sandboxie app also appears as separate program on the taskbar, prefixed with '[#] Sandboxie'.

If you create a new file within a program, Sandboxie will tell you and offer you the chance to recover them right away (you can always do so later on). This can be saved to your PC as normal, recovered from within the sandbox itself.

When you're done with sandboxed apps, close them as normal. To clear the actual sandbox, right-click the Sandboxie icon in the

taskbar or the entry in the Sandboxie interface, and select 'Delete Contents'.

When you select the option to delete contents, you'll also be shown any other files that can be recovered before you delete the session. Be sure to check this in case you need to save anything to your actual system.

If you have a specific program you want to run, you need to use the 'Run Any Program' option. Clicking this will prompt you to locate the application, which you can do by typing in the path or using the browse button to find it. You can also run programs as a UAC admin, if you like, but this will still be protected.

The program will run, once again denoted by the yellow border. You can use the program as normal, using the same method to recover save files if you need to, but it'll run in a safe area. This is a great method to use when trying out new software and downloads from various freeware and trial websites.

Sandboxie also has a settings section that lets you tinker with how it works. These are all useful, but the Restrictions section is of particular interest. Here you can limit application access to the internet, prevent applications from running in a sandbox and restrict more admin rights.

The first option here is very useful and can be great if you want to run a program without it being able to connect to the internet. By default, all applications can access the internet, but you can change this to specify which are allowed.

The second option lets you create a sandbox that can run only certain apps and no others. This could be great if you want to let your kids use the computer and only want them to run certain programs. Also in the settings is the option to restrict file and folder access on the PC, so sandboxed items can only access data you allow, and you can also restrict access to the Windows registry.

As you can see, it's a powerful tool, and there's plenty of scope to create a truly safe system, with sandboxing being a fantastic tool to help keep your PC and your data safe. So if you've never tried sandboxing, now's a good time to get started. **mm**

## Shifting Sands

Although you may not know it, you're already using sandboxing to some degree. Many programs we use on a daily basis these days function as sandboxes, keeping the rest of our system safe or at least attempting to do so. Perhaps the most common example would be the humble internet browser.

An internet browser is effectively a sandbox, as it runs the internet in a self-contained environment, running scripts and other code within this area, which is separated from the rest of the system. This means that we can browse the internet with relative safety, and the browser can handle most issues. Every time you see your browser ask if you want to run a script or allow a pop-up, it's effectively acting as a sandbox.

Sure, you may suffer the odd home page hijack, but for the most part, this is better than the alternative. Of course, browsers aren't bulletproof, hence the need for added protection, but without their basic abilities to sandbox, PC security would be a whole different matter.

Any program that runs on your computer with limited permissions is a sandbox really, as that program cannot make changes or do anything to your PC. It's for this reason that it's advisable to limit what programs can and cannot do by running them as restricted accounts.



# Micro Mart App Awards 2014

Join Keir Thomas as he runs through  
some of this year's very best apps  
available for iOS and Android devices



Here's the second and last part of our inaugural Micro Mart App Awards. Below you'll find seven more of the best apps we've seen, plus one app to which we've awarded this year's booby prize. Each of the winning apps quite simply demonstrates how things should be done, and a tablet or phone that doesn't feature them is incomplete. As usual, all the apps discussed below can be found in the Apple App Store or Google Play – or in most cases both.

## Calendar: Class Timetable

With both Android and iOS very effectively taking care of calendaring functions via Google Calendar and iCloud, we look elsewhere for a winning app in the calendar category. Fortunately we don't have to look very far, because Class Timetable blew us away in our recent group test, combining an innovative yet fundamentally old-fashioned approach with a terrific interface and extremely simple operation.

Timetable is an unusual calendar app. For starters, it does away with the concept of dates. Instead, it lets you schedule daily events for up to four weeks (although a week is set as the default). The idea is that you can create a timetable that repeats week in, week out – invaluable for students but also a potential lifesaver for certain kinds of workers, who can simply and easily add in meetings or visits and subsequently move them around without having to worry about any other details. If an event is to repeat each week leave it there. If it's a one-off, then delete it when you've finished, which will open up a gap for another appointment to be added.

Timetable makes basic but clever use of colour coding to differentiate between events, and everything syncs automatically to the cloud, allowing you to tune in on both your iPad and iPhone, for example. All that's really missing is a web interface, but we're sure it's on the developer's To Do list.

Basic functionality is entirely free of charge, and the interface is mercifully free of advertising. Class Timetable is available for both Android and iOS devices, and while the Android version is a little more basic than the iOS version (it treats tablets as particularly large phones), Android users get notifications as part of the free package. On iOS this is a 69p upgrade.

## Image Editing: Photoshop Touch

Not to be confused with the significantly more primitive Photoshop Express, Photoshop Touch is a £6.99 app that brings a significant chunk of the power of the desktop Photoshop to iOS and Android devices. While image editing professionals should not yet trash their Macs and PCs, the intention is that Photoshop Touch provides them with a virtual sketchpad with which to play around with images in more relaxed moments. It plugs into Adobe's Creative Cloud to provide a seamless experience and, of course, is compatible with PSD file formats – a boast very few, if any, other phone or tablet image editors can make.

So what does this little brother borrow from its elder sibling? You get layers, complete with layer blending modes, plus the usual selection tools, brushes, cloning, levels, curves, colour correction, ready-made filters, warping, lens flare, text tools and more. Certain tools are



▲ Class Timetable might sound like it's just for students but anybody can use it to create simple 1-4 week repeating schedules

conspicuous by their baffling absence – there's no dodge and burn tools, for example, even though they would surely be a shoo-in for a touch-based interface. Also missing is the always useful Heal tool.

All the tools have been modified for use with your finger, although very little of the original configuration options have been sacrificed. Because even the pro-tablet Adobe has to admit that touch can be a little clumsy at times, you can also activate a cursor for precise editing work.

In a world of iOS and Android image editors that are really little more than filter-applying apps, Photoshop Touch stands heads and shoulders above. That it's easy to use yet powerful is a testament to the amount of thought Adobe has applied.

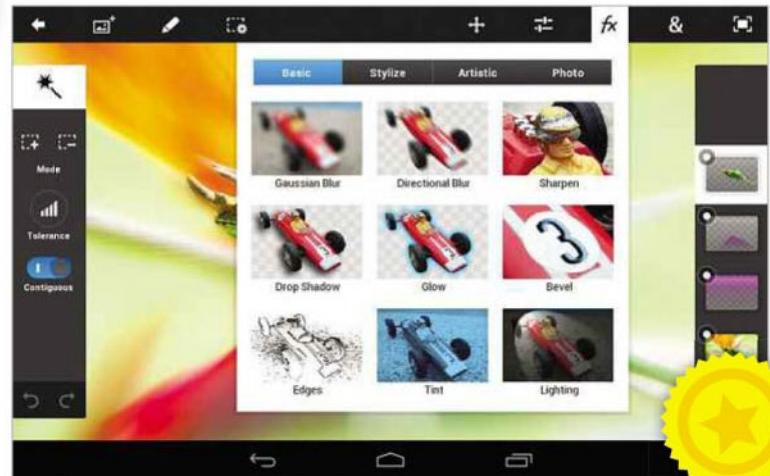
### Search: Google

Apple might have fallen out with Google, switching the search engine of choice in iOS8 and Yosemite to Microsoft Bing, but the animosity isn't returned – or at least not if Google's investment in iOS apps is anything to go by. Indeed, iPad and iPhone users have received most if not all of the coolest technical innovations added into recent releases of Android, including the Google Now and OK Google features. Both can be found in the standard Google search app.

OK Google allows you to search or ask certain questions simply by saying 'OK Google' out loud. Alas, because of the way iOS works, the Google app must be running for this to work, and you'll need to have previously authorised access to the microphone, but leave the Google app running while your device charges up and you have an always-available search tool. In addition to searching, you can ask questions, such as 'What's the tip for £43?' or 'How do you say hello in Japanese?'. While Siri offers similar functionality, OK Google is ultimately backed up by Google's search technology, which remains light years ahead of even the nearest competitor.

Google Cards is an attempt to provide information before you even search for it. Time travel isn't involved, sadly. Instead the Google app learns about you the more you use it and also when you use Google's other services. For example, it learns where you live so it can tell you how long it'll take to get there or tell you what the weather's going to be. It learns who your favourite football team is so it can show you scores. It learns from your Gmail when you're going on holiday. Turn on web history so that Google can monitor your browsing across all your devices, and it'll be even more useful.

All these features are packed into a pleasant, easy to use and innovative user-interface. Google was one of the first developers to popularise the use of index cards in its interface, for example, and that trend has even spread to Apple.



▲ Photoshop Touch brings enough of the power of its bigger desktop brother to make for an exception image editing experience

### Dating: Tinder

2014 was the year that apps truly broke into mainstream consciousness, and dating app Tinder certainly got people talking. The premise is brutally simple: it connects to your Facebook account, lets you input a few additional details plus snap a picture, and then lets you view other single people in your geographic area. You swipe right if they interest you, and left if they don't. Should you and another person swipe right on each other's profiles, then you get the chance to text chat and, in the vernacular of young people, arrange a hook-up. A BBC news report quoted one user as saying Tinder "is the finest app that the technological world has to offer", while somebody else claimed Tinder "solves a problem for humanity". The folks behind Tinder claim it's brought about over 150 marriages, although some would argue that the goal of the app is somewhat more fleeting.

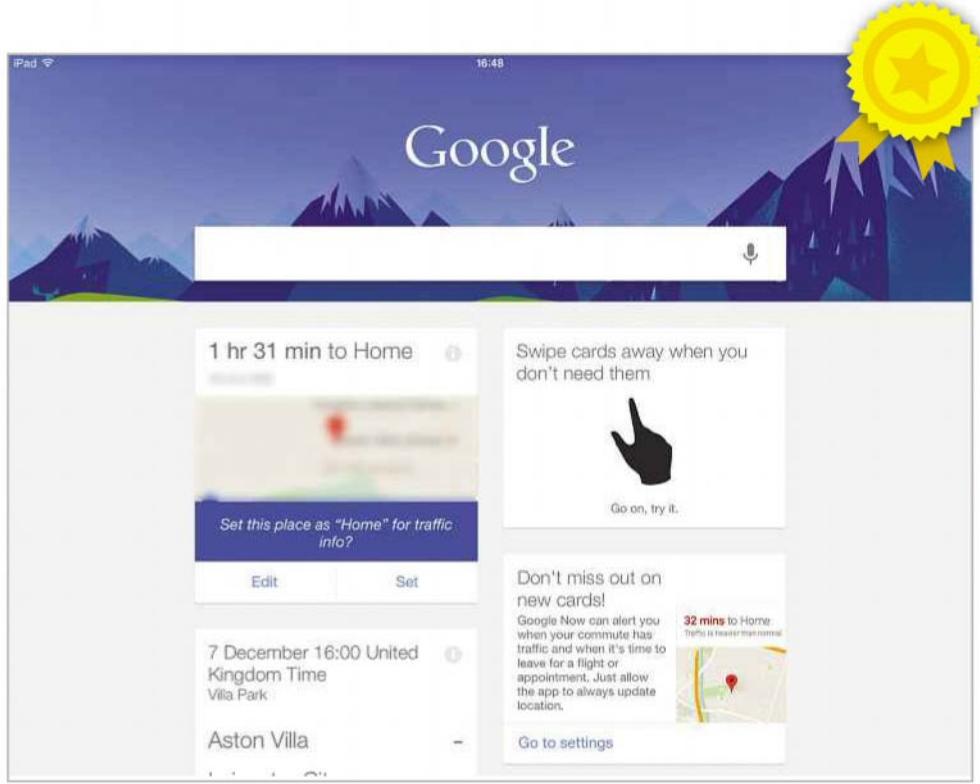
66 2014 was the year  
that apps truly broke into  
mainstream consciousness 99

Aside from a handful of settings to refine the kind of people you see, that's about all there is to say for the app. It's free of charge, but the recent announcement of a premium service has caused consternation. Tinder Plus will cost anywhere up to \$20 (the price hasn't yet been decided) and let users undo mistaken 'Nope' swipes – something that's easy to do when you've in a hurry, apparently – and will also let you view matches in non-geographic areas. In other words, it's ideal if you're heading out to Ibiza and want to arrange a welcoming party. Tinder's also extending its tendrils into the nascent world of smart watches, to give the process of hooking up a James Bond feel.

Tinder is a classic app in that it marries together blisteringly simple functionality with a good-looking interface and lashes of cultural importance. As crude as what it offers might be, it's an app that can't be ignored.

### Weather: Yahoo Weather

The battle for weather apps took place a few years ago, with that being a natural direction for the nascent app industry to head in. Apps like BBC Weather or the Met Office weather app are found on many British phones or tablets, and Yahoo Weather arrived late to the party.



▲ Google brings some of its most useful search technology to iOS with its Google search app, including Google Now



▲ Arranging a hook-up or even finding a marriage partner is as easy as swiping left or right using Tinder



▲ Yahoo Weather makes it a joy to discover the often depressing news about upcoming conditions

To win, it needed to do something more than present weather data – which it does very well, with just about every scrap of info about current and upcoming conditions.

Rather cleverly, its first move was to tie in with Yahoo's Flickr photo sharing service to display photographs of your current area. This serves as a wallpaper backdrop for the data. Some of the images picked out of the throng are simply stunning.

Secondly, Yahoo Weather uses a dashboard-like scrolling display complete with icons and animations that make it a joy to discover the forecast. Wind speed is shown as wind turbines rotating, for example. The phase of the moon is shown alongside the position of the sun in the sky right at that very moment. Additional locations can be added in too, so you can monitor the weather in Rhyl before setting off on holiday.

Yahoo Weather really is an app you can leave running on a device while it charges in order to glance at it occasionally. It's available free

on both Android and iOS, and you don't even need a Yahoo account to make use of it.

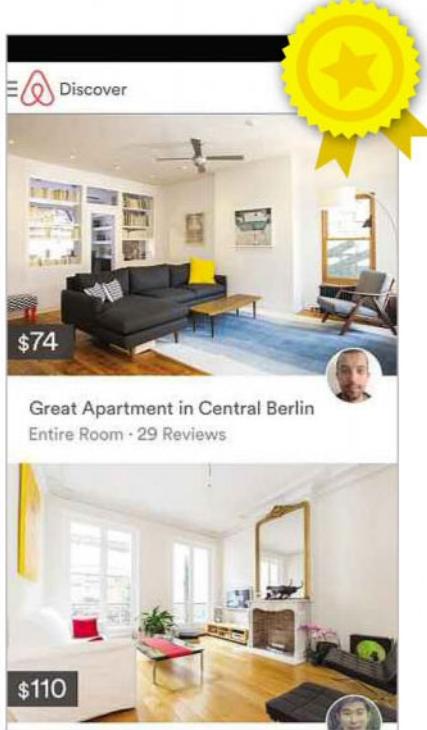
### Travel: Airbnb

Another 'hook-up' app that's taken the world by storm, Airbnb lets people find places to stay for a short while. However, unlike your average letting agency or holiday company, Airbnb connects ordinary people. You might have a spare room, for example, and you can use Airbnb to let it out to others who might need to stay for a few days while attending a conference. Initially this sounds suspect. Who wants to sleep in the house of a complete stranger? But when you realise that the nature of 'real' B&Bs is exactly the same – somebody opening up their home for others – then you realise there's not much to fear and lots to gain. Each place collects reviews from visitors too, so only the foolish would approach somewhere with a bad reputation.

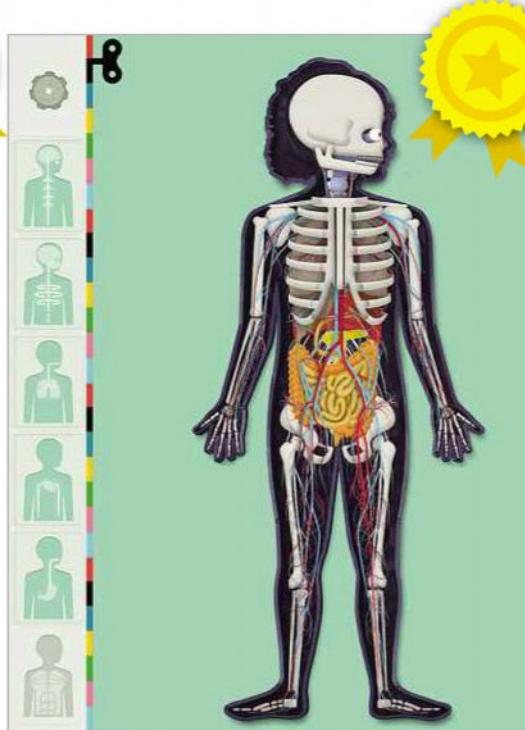
In the US, Airbnb has even been used to sublet rented apartments. People move out to a cheaper place and let their place for more than the rent, creaming off an often substantial profit. Airbnb is so radical an idea that laws and tenancy agreements don't yet take it into account.

Using the app is simple – just select where you want to go using the search function, and properties will appear in a list. Usually there are at least a handful of photographs to browse through, alongside details of the owners (including what they do for a living) and whether it's a room in a private dwelling or an entire property. From our searches in popular locations it does appear that many commercial holiday lets have jumped on the bandwagon, although perhaps that's no bad thing. Our favourite property? A Mongolian yurt that can be had for £70 a night and sleeps five people. Not bad value for a camping trip!

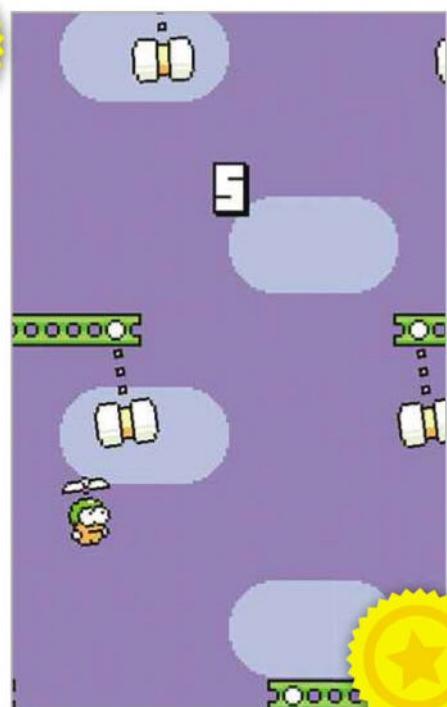
Like other apps in our awards, Airbnb keeps things very simple yet delivers on what it promises and is actually making cultural shifts happen out there in the real world. A worthy award winner.



▲ Airbnb lets you track down a single room or an entire property for overnight stays and usually at a bargain price



▲ The Human Body makes it fun to learn the names of the various systems that make us who we are



▲ Swing Copters looks great on paper but is simply unplayable, so it's the winner of this year's booby prize

## Education: The Human Body

We love this app because it's just how we would have envisioned interactive education on a tablet or phone if asked to do so 30 years ago. The goal is to teach youngsters about the way the human body works, and they start by creating a simple avatar (male or female), before they switch to various internal views, such as the nervous system, skeleton, respiration, cardiovascular, digestive and muscular. Each view comes complete with sound effects, such as breathing or beeping indicating nervous system messages, and it's possible to zoom in on various parts to not only watch what happens but also to prod and poke a little bit. Put it this way: this is the first app we've seen that lets you push waste through a virtual sphincter. Some views also have additional interactive modes; you can feed your avatar, for example, or cause him to start running to see the effect on his respiration.

The views can be overlaid on each other to see how one interacts with another, and labels can be not only applied but also detached so that children can attempt to reattach them in the right place. The skeleton can also be disassembled in a similar way although be careful not to remove too much internal support or otherwise the skin will fall into a heap!

Parents get access to a dashboard where they can read a manual about how the app works, plus hints and tips on how to get the most from it. They can also adjust a few settings.

The Human Body is both interesting and fun, even for those to whom youth is a long lost memory. For getting education into kids without them realising, it can't be beat and costs £1.99 for the iPad and iPhone.

## Booby Prize: Swing Copters

Dong Nguyen was as surprised as the rest of us when, out of nowhere, a game he'd released a few months earlier suddenly became popular. Back in 2013, Flappy Bird offered gameplay as asinine as its title but somehow walked the finest of lines between pure genius and insanity. It was addictive and thus became hugely

popular, leading to literally hundreds of clones. When Nguyen removed his game from the app stores, fearing he'd created a monster, people sold their phones for a premium simply because they still had the game installed.

So when in August of this year Nguyen released Swing Copters, a follow-up that attempted to evolve the original low-fi gaming concept, the world looked on with interest – and then shrugged its shoulders. Whatever magic blessed Nguyen during the creation of Flappy Bird had deserted him. Swing Copters was a well-made game; it was just unplayable.

**“ Swing Copters is difficult. Really, really difficult. And not in the good way ”**

The aim of Swing Copters is simple. A little guy with a helicopter hat rises into the air at the start of each level but he can only fly at 45-degree angles. Each time you tap the screen he changes direction – if he's flying left, a tap starts him flying right. He must navigate through gaps in platforms to which some idiot has attached slowly swinging hammers. If he hits anything it's game over, as with Flappy Birds.

Swing Copters is difficult. Really, really difficult. And not in the good way, but in the annoying way that makes you tap the home button and play something else. While Flappy Birds offered scope for improvement, Swing Copters simply didn't let the average person get beyond lasting for more than a few seconds, no matter how much they practised. No doubt sadists somewhere in the world get high scores, but for the rest of us there are simply better games out there that combine playability with frustration. **mm**

# Remembering... Dot Matrix Printers

## **David Hayward recalls the cacophony of the print room**

**B**ack in the mid-nineties, I remember sitting in the IT Support office of a college when the Director of All Things (I can't recall his exact title, sorry) burst through the door and demanded we set up in a separate room, away from his offices and placed in the furthermost corner of the building. The reason: dot matrix printers.

It wasn't just one printer causing the poor bloke a headache - we had something like a dozen dot matrix printers of varying sizes, speeds and volume levels almost continually spitting out rainforest sized reams of tractor fed continuous paper. Admittedly, the resulting din was pretty spectacular; you had to shout to be able to be heard above it.

Thus, a print room was created and we bravely manhandled the hundredweight of printers down the corridor to their new home. That would have been the end of this tale, except for the fact that, amusingly, you could still hear the printers when stood outside and the block of flats next to the college made a collective complaint. The end result was the college being forced to buy nice new laser printers. A happy ending – for those with sensitive ears at least.

History

The first dot matrix printers appeared in the late sixties, but they weren't commercially available until DEC (Digital Equipment Corporation) introduced the LA30 in 1979. A few months later, Centronics launched the C101, which introduced the Parallel Interface (co-developed with Brother) that persisted until it was eventually replaced by USB many years later.

As time moved on, print quality and speed was greatly improved. The Epson MX-80 for example, was considered a milestone product and allowed both home and business users access to a cheap, but wonderful, workhorse printer. 1985 saw the release of the legendary Tandy DMP-130, a printer so well thought-of that a popular rumour states there's one installed in the President's private nuclear bunker. At 100cps, why not? After all it was

popular in schools, colleges, universities and businesses well into the mid-nineties

Eventually though, the dot matrix printers proved to be too expensive to maintain compared to mass produced, laser quality printers that were beginning to drop in price to the point where non-black ops military budget holders could buy one.

Thus it was that we said farewell to the dot matrix printer. A unit so impressive you could shelter behind it in confidence should the enemy ever drop a thousand pound bomb. You probably could have made roadblocks out of them.

## The Good

They were pretty solid and, providing no one ham-fisted got to the controls, generally required very little attention. You didn't need to replace paper all that often either – a ream of twenty miles worth of continuous lasted a day or two, and the ribbons tended to go on for some time before fading to nothing. I once knew a chap who licked the ribbon to get a few more pages out of it. Crazy times indeed.

## The Bad

Should someone unqualified to open a tin of beans get their hands on the controls, then you were in for a rough day. The touchpad buttons rarely did what they advertised, and untangling the horrendous mess of a butchered ribbon was enough to drive the sanity from you very quickly.



▲ You knew where you stood with a dot matrix printer... As far away as possible so as to be heard

What's more cutting the feed's perforated edges while the printer in use was a dangerous task. Fingertips were fast becoming an endangered species.

## Did You Know?

- A dot matrix printer has been programmed to play Survivor's classic *Rocky* theme *Eye Of The Tiger* ([goo.gl/J2sUfQ](http://goo.gl/J2sUfQ))
  - Apparently the dot matrix printer used in Wargames was an ImageWriter, from Apple
  - You could record the sounds made by the printer and play it back through a program – used by spies, no doubt – to find out what was being printed
  - Multi-colour ribbon could be used with a special program to produce quite amazing dot matrix art work

# In the flash of one second, Delta-10 can print the alphabet six times.

**▲ We were a patient bunch back then, imagine having to wait for a whole second!**

# The Things That Frustrate Us About... Online Shopping

**Heading to the high street in December might not be a good idea, but online shopping has its pitfalls too**

**S**ince about mid-November, popping to the shops has been a bit of a nightmare. The annual Christmas madness had set in, and every shop was full of people trying desperately to find the perfect gift for a relative they only see once a year – which made it extra stressful if you just needed to pick up some socks, bread or literally anything. Online shopping should be the ideal alternative, since you can do it from the comfort of your own home – you can do it in your pyjamas, take your time comparing offers and usually get a better price than you would in the real world. But obviously nothing's ever as simple as it seems. Online shopping has plenty of frustrating elements too...

## Argh! Impatience

The first problem is that you don't get the instant gratification you would by shopping in real life. You choose what you want, hand over your credit card details and then you wait. And wait. And wait. It's bad

enough waiting for deliveries at the best of times, because there's going to be at least a day or two between making your purchase and holding it in your hands, but with Black Friday and Christmas (and the inevitable bad weather that comes along at this time of year), everything's backed up and delayed. If you're really unlucky, you might have found that your Christmas presents didn't even arrive in time for the 25th.

**Fix it:** Shopping early takes some of the stress out. Otherwise, you might want to look into paying extra for expedited shipping – and it's always worth checking the website for any warnings of delays. (Investigate the store's Twitter profile too: if they're replying to lots of customers complaining about not receiving their orders, maybe try buying somewhere else!)

## Nrgh! Confirmation Disasters

If you buy something in a shop, you know it's yours. You're holding it in your hands,

after all. But online shopping can sometimes be subject to confirmation, so you might think you've bought something, only to find out several days later that the shop has run out of stock over a particularly busy period, and your order has been cancelled.

**Fix it:** This is totally out of your control, I'm afraid. You just have to cross your fingers and hope for the best.

## What? Queues?

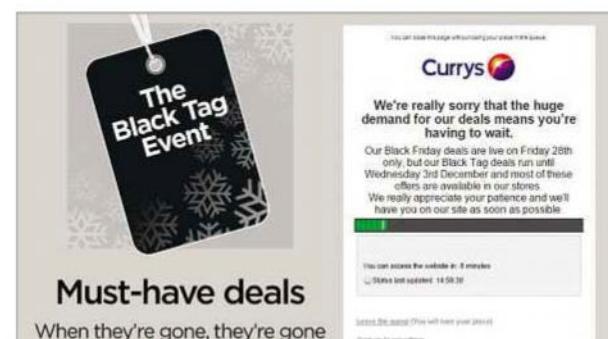
Yup, even online you can't escape the queues. During particularly busy shopping days, like Black Friday and Cyber Monday, you might find the website you need to access to do your shopping is down, or that it's putting you in a holding queue, because its servers can't handle all the traffic. Having to wait just to buy some toys online is somehow deeply annoying.

**Fix it:** Just focus on the alternative. You could be standing in a long queue in a physical shop, and that would be much worse. At least while you're waiting in an online queue, you can go and put the kettle on.

**Choose a delivery option**

**FREE ONE-DAY DELIVERY** FREE One-Day Delivery on This Order: Get fast, free delivery on this order by selecting "FREE One-Day Delivery with Amazon Prime" below.

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- One-Day Delivery [get it tomorrow, Friday, December 12](#)
- Express Delivery [get it by 1pm tomorrow, Friday, December 12](#)
- Evening Delivery [get it \(delivery between 6pm-10pm on weekdays and 4pm-8pm on weekends\) on Thursday, December 11](#)



**The Black Tag Event**

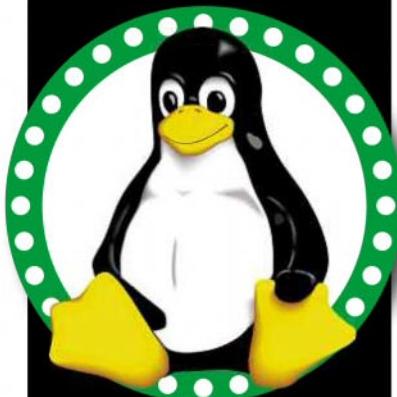
We're really sorry that the huge demand for our deals means you're having to wait. Our Black Friday deals are live on Friday 28th only, but our Black Tag deals run until Wednesday 2nd December. All these offers are available in our stores. We really appreciate your patience and we'll have you on our site as soon as possible.

**Must-have deals**  
When they're gone, they're gone

The item is currently out of stock at our suppliers and so the item has been placed on Special Order. This means that as soon as we obtain the item your order will be treated as priority and will be immediately dispatched.

Unfortunately, we cannot provide you with an estimate of how long this will take to obtain. We are in regular contact with our suppliers and we are making every effort to fulfil your order as quickly as possible.

I appreciate that you have waited longer than expected for this order to arrive so thank you for your patience.



David Hayward has been using Linux since Red Hat 2.0 in schools, businesses and at home, which either makes him very knowledgeable or a glutton for extreme punishment

Linux

# It's The End Of The World As We Know It...

**Linux supercomputers computing all kinds of stuff**

**L**inux powered supercomputers do a lot more than 'simply' help map out weather patterns, or locate the Higgs Boson. A section of the university of California is using some processing time on their local super cluster to try and help fathom out some of the wild predictions as made by various prophets over the years, in an attempt to find out if the world is really going to end soon.

According to the people using the cluster, they have fed in all the relevant data on predictions like 2007's second coming, 2008's 'Large Hadron Collider ripping the earth apart with a series of black holes' non-event, 2011's rapture (featuring Harold Camping), 2012's apocalypse-that-never-was, and now it's the turn of 2014 and the possibility of World War 3 breaking out and the end of all life on earth.

We're not sure exactly what data they've been feeding into the machine this time around, or how accurate any of the doomsday prediction will be; perhaps

there's a pretty good chance that North Korea will launch a pre-emptive nuclear strike? We certainly hope not, but some of the initial results of the feed are quite interesting – aside from the possibility of North Korean-inspired nuclear destruction, another possibility put forward by the programming these students have developed is that, ludicrous as it sounds, the Pope is in fact an alien and has been secretly watching earth and prepping it for his race to arrive and enslave

## **There Must Be Other Uses For Linux?**

How much faith you put into these 'predictions' is purely up to you, however you have to admit that they are to be taken with something resembling a pinch or three of salt.

It's a noble thought, though, to use a Linux super cluster to try and predict the outcome of the earth and humanity using the current and historical data, trends, population levels and how the media affects the

**“The Pope is in fact an alien and has been secretly watching earth”**

us all. Only slightly more realistic is that there are a number of asteroids on a collision course for us, and they will bombard the planet at the stroke of New Year's Day – rotten timing, eh?



world. It's just a pity that it's going to waste on seeing if and when the vanguard of the Zylon Empire is going to hover up the Whitehouse.

If all that sounds a little depressing, the program did manage to elaborate on events far into the future. If the various asteroids, alien lizard people, weapons of mass destruction or zombie risings don't have it in for humanity, then the Big Rip in the 200 millionth century surely will, as all the atoms in the universe will no longer be able to hold on to their electrons and will simultaneously rip apart.

And on that soberingly dark little thought, we shall bid you a Happy New Year!

**◀ If we could think of a bright side, we'd say look to at it**

# 2015: 30 Years

**Sven Harvey looks forward to 2015**

**2**015 marks a rather large milestone in the life of the Amiga platform. It was on the 23rd of July 1985, nearly 30 years ago, that the Commodore Amiga (the model now known as the Amiga 1000 or A1000) was first unveiled to the public with the assistance of Andy Warhol and Debbie Harry.

The 25th and the 26th of July 2015 will see the running of a 30th Anniversary of the Amiga event at the Computer History Museum in Mountain View, California, USA. To find out more about the USA celebration of the creative computing platform, check their website out at [www.amiga30.com](http://www.amiga30.com). We've heard that further events are in the planning stage both here in the UK and in Germany, so keep tabs on Amiga Mart for further information as it becomes available.

Coming back to the future, AmigaOne X5000 beta test kits appear to be arriving with beta testers as I write – so 2015, it is rather safe to say, should see the release of the new AmigaOne hardware. Though the particular model(s) to be released are to be confirmed, the AmigaOne X5000/020, X5000/040 and X3500 are all possible release candidates.

With Amiga OS 4.1 finally due for release by the time you are reading this, it would also be expected that an initial version of AmigaOS 4.2 might be with us by the end of the year, which will start tapping into the potential of the current and future AmigaOne hardware.

2015 will also see the release of far more software for AmigaOS based machines, and not just those running AmigaOS 4.1. Following several

aquisitions, A-EON Technology is now heading up development of Personal Paint, Libre Office, OctaMED Soundstudio, Warp 4D and now, the full professional 3D rendering package, Cinema 4D – it's a safe bet that new versions of each of these software packages will be made available during the course of the year, even if they are only relatively minor updates as the software is made as hardware-agnostic as possible, while still being Amiga OS4.x compliant.

Personal Paint 7.3 is already available as a download from the AmiStore, and also as a configuration option as a pre-install on a Compact Flash card hard disk replacement kit purchased from AmigaKit, and

can be found by visiting [goo.gl/OYEGBP](http://goo.gl/OYEGBP).

Following the release of *Superfrog HD*, *Alien Breed* and other Amiga titles on PlayStation formats (and others), and the promised reboot of *Shadow Of The Beast*, it's only a matter of time before further games are rebotted or ported to newer hardware. Rumours abound that Project X may well be a possibility along with a restart of the *James Pond 4* Kickstarter. Of course this year could also see the release of the *Bitmap Books Amiga Compendium*, that so many backed on Kickstarter in 2014.

▼ *The original Commodore Amiga that started the format off back in 1985*



## Amiga Mart In 2015

As the year progresses I will be revisiting the A1200 as the best of the 'real' classic Amigas to get started on. We'll examine the best add-ons for the platform and see quite what can be done with it as a computer in today's world – a supported wireless network card is only the start!

You can also look forward to further articles on using *Amiga Forever* on the PC, and other hardware platforms, thanks to other, not-directly-supported emulators using the Kickstart and other data on the distributed *Amiga Forever* disc. One challenge is to get the old *Infinite Frontiers: The Final Frontier* diskzine I worked on in the past, working on an android tablet via Amiga emulation, LCARS (*Star Trek*) style computer interface and all!



**Sven Harvey has been our Amiga specialist for over 14 years, drawing on his 23 years of retailing computer and video games and even longer writing about them.**

A  
m  
i  
g  
a



Ian is a professional IT analyst, a semi-professional writer and a pretty amateur electronic musician. He likes gadgetry and loves making gadgets do things they were never designed to do

Mobile

# Best Phone Accessories 2014

Ian McGurren looks at the best accessories for your new toy

**S**o, you've been on the 'nice' list this year and found yourself the proud owner of a shiny new mobile toy then? Well, you'll be wanting to spend all the Christmas money you go on some cool accessories for it then, won't you? Now, if only someone could help you and make a few suggestions...

Possibly this year's most fun you can have for around £10, Google Cardboard, offers the virtual reality of the Oculus Rift for mere buttons. Well, that's not technically true, as the OR is streets ahead, however that's not to say the Cardboard isn't fun or effective (on both counts it scores an unequivocal 'yes').

Like a 21st century Blue Peter make-and-do, the Cardboard is so called due to it literally being made from cardboard (by the user from a downloadable design). Then with the addition of lenses, NFC, the user's gyroscope-equipped phone and select apps from Google, a pretty fun and immersive VR experience can be had by all.

We all know how floors and phones just don't get on when they meet each other at high speed, but we also solutions like

bumpers to mitigate against this. We specifically want to make note of Spigen's excellently-named Neo Hybrid Ex. Designed to protect the device you (or someone else) has paid a large amount for, while still showing it off, the case acts as rather like a tyre round your device, meaning it'll absorb all that energy if it's dropped. The case also protects the front and back, so scratches should also become a thing of the past.

bargain and a curio all wrapped up in one. Just make sure you have a HDMI equipped TV – though if you don't, yet have a powerful smartphone, you are probably in a tiny minority...

Now, if you're really flushed with Christmas cash, and your phone is of the little green robot persuasion, then there's really only one accessory for you to grab this year, the LG G Watch R. With the imminent arrival of Apple's Apple Watch, wearable

66 This is probably the device most likely to cause Cupertino concern 99

It's not an easy case to get on, though knowing it's not going anywhere is reassuring. It comes in six colours and is also available for other high end devices too.

While it has the name Google on it, the Chromecast actually has a reach beyond just Android phones. The not-quite-a-streamer streamer may not be the best device on the market for all out smart TV functionality, but it's a great start and is capable of other things too. Show off the Christmas party photos? Easy. Watch Sky's Now TV service? Three free months in the box. Even play a few games? Certainly Sir, Android or iOS? You can push your browser screen from your phone or even a laptop running Google's Chrome browser if you like, though there's a bit of lag and it's still quite flakey. However, for around £20 (and with the free Now TV voucher in the box) it's a

tech is about to be big news, and while Android Wear hasn't quite broken through the mainstream just yet, this is the device most likely to cause Cupertino concern. While it's fundamentally the same as other Android Wear devices, offering the same interesting functions, the G Watch R gets the design right. Taking the round concept (a watch, round? I never..) from Motorola's moto 360 and marrying it with a higher resolution OLED display.

This makes it the first Wear device to actually look like a watch, but also offer all the extras. Given you can have many different faces too, it can also be a watch for all seasons.

So that's the little devices out of the way and possibly some of your money, so apologies for that! However, next time we find out what delights await your tablets, so wallets at the ready...



# Escape from Colony 8

**Shaun has been mostly trying to escape the alien invasion of a remote colony this week**

**D**eveloped and released by Juan J. Martinez through his website at [usebox.net](http://usebox.net), *Escape From Colony 8* is a 2D explorer-type shoot-em up for the Sinclair ZX Spectrum. This is the 11th release in the 'One Game A Month' challenge that Juan chose to take on at the beginning of 2014; a challenge that has seen him come up with three title for the Speccy (other titles are for more modern platforms such as the Android operating system).

In *Escape From Colony 8* you are the only survivor – or so it appears – of an Alien invasion, this leaves you with hordes of evil Scorpion-alike creatures (which will attack you if you're close enough) to obliterate. Thankfully, you are armed with a limited-ranged shot gun and have more powerful missiles at your disposal once you've found a supply of them. There are first aid supplies at various locations on the colony base, which will replenish or boost your energy supplies, and different coloured key cards to find and collect which give you access to different areas within the location.

On loading, you are greeted with some really nice beeper music, with options for joystick control – or you may wish to redefine the keyboard controls from the usual Speccy default.

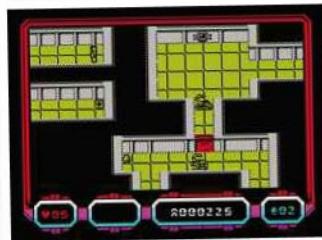
*Escape From Colony 8* plays really well and is solidly coded. My only gripe is that the VDU terminals around the game world are not interactive, but this would have added nothing to the all-important gameplay.

The above URL has the tape image in a single compressed archive, which includes some instructions. Juan's Twitter account is [@reidrac](https://twitter.com/reidrac) if you would like to follow him and leave some feedback about this and his other Speccy titles.

## Xplosive

There's a new game for the Commodore Plus/4 and compatible machines (such as the Commodore 16 with a 64K RAM expansion) called *Xplode Man*, which is an interesting take on Hudson Soft's 1983 classic *Bomberman*. The game is played on a from a top-down perspective in glorious 2D. Each level is a static screen with at least one roamer and wall partitions, some of which can be smashed through by placing a bomb next to them, or within the explosive's range. You are not immune to the blast so once placed, you have a limited time to get out of the way. There are bonus items to collect which are left behind, in some cases by the recently smashed walls. Each level is complete once the elements within it that can be destroyed are, with the exception of any collectible sundries.

*Xplode Man* has been developed and released by a



▲ *Escape from Colony 8* for the Sinclair ZX Spectrum



▲ A new *Bomberman* clone for the Commodore Plus/4 by Assassins

group called Assassins, based in Hungary. It has produced some of the best C16 and C+4 software we've seen in recent years, and this is certainly up there with some of its other quality releases.

*Xplode Man* is available as a free download from Plus4 World at [plus4world.powweb.com/software/Xplode\\_Man](http://plus4world.powweb.com/software/Xplode_Man).

## Next Gen

Jason Orris has released a text-based piece of entertainment software for the Commodore 64, which is based upon a strategy game which dates back to 1971 called *Star Trek*. This was, of course, a science fiction television series created by Gene Roddenberry in the mid 1960s.

The original *Star Trek* game was written in the then fledgling BASIC programming language, and versions were created for various terminal based mainframe computers that existed at the time. In Jason's version, which is called (of course) *Star Trek: The Next Generation*, the task in hand is similar to the original terminal-based game – to hunt down and obliterate a number of Klingon warships that have rebelled against a treaty with the Federation. Innocent civilians and star bases are under siege, with the Starship Enterprise being the only ship in the quadrant of space that is capable of repelling and attacking the Klingon rebels.

The game is played through the command console of the Enterprise, with updates and suggestions on tactical manoeuvres that you may take, and it is entirely keyboard and menu driven. A YouTube presentation of the game in action is available at [youtu.be/ejoJ02jdPtU](https://youtu.be/ejoJ02jdPtU), with the game available to download from the Commodore Scene Database at [csdb.dk/release/?id=135390](https://csdb.dk/release/?id=135390).



Shaun has a passionate interest in 8-bit computing and gaming and has been finding novel ways to use retro technology since 1994

8  
bit  
gaming

# Specialists



Ryan Lambie has loved videogames since he first stared up in awe at a *Galaxian* arcade cabinet in his local chip shop. 28 years on, Ryan writes about gaming for Micro Mart. He's still addicted to chips and still useless at *Galaxian*

# Gaming



## Lost In Space

An astronaut fights for survival in zero gravity in the forthcoming *Adrift*. The first-person visuals look stunning so far

This week, Ryan looks ahead to some of the sci-fi games coming up in 2015, including stranded astronaut simulator, *Adrift*...

### Plug & Play

A new year brings with it the promise of an avalanche of forthcoming games. So in order to cut things down to size a little, we've decided to focus on some of the most promising sci-fi themed titles due out in 2015, from major releases with big budgets to smaller indie games made by just a few artists and programmers.

First up is *Adrift* (stylised *Adr1ft* by its creators), a space adventure we briefly covered when it was first announced in 2014. Back then, we knew little about it other than its premise and the history of its designer, Adam Orth, who founded the indie studio Three One Zero after he lost his job at Microsoft. However, since *Adrift* was picked up for distribution by 505 Games, it's progressed handsomely, and we were recently treated to our first proper look at the game in motion – and it looks spectacular so far.

*Adrift* sees you take on the role of an astronaut trapped in Earth's orbit. Having woken up in the midst of a wrecked space station and a damaged space suit, your task is to comb through the wreckage of the disaster, find oxygen tanks to keep yourself alive, and find a means of getting to safety. Comparisons to the 2013 film *Gravity* are

inevitable, but *Adrift* uses the survival theme of that blockbuster to highly original effect. It's one of a growing collection of first-person games that de-emphasises shooting and combat, presenting the player instead with a zero-gravity environment of peril and scarce resources.

What Orth has come up with is eerily beautiful in places. Clearly set in the near future, *Adrift* contrasts the sleek, Kubrickian interiors of the space station's intact areas with the ugly ruins of its damaged exterior. The disaster has left a surreal trail of destruction in its wake: leaves from the remains of an orbiting garden float in the void. The corpse of another astronaut drifts in front of a vista of Earth.

What we don't yet know is how we'll interact with all these beautiful environments. In the first trailer, we see the player's hands reaching out and grasping for drifting oxygen tanks, but studio co-founder Omar Aziz says there'll be more to the game than just "floating around".

"It has to be fun to interact with the world," Aziz told *Forbes*. "There's a game in there."

We'll have to wait and see exactly what that game will entail, but we do know that *Adrift* will also work with Oculus Rift, which, in conjunction with

its zero-gravity, first-person visuals, could result in a truly absorbing experience – whether the reality matches the potential will be clearer come summer.

### Online

Of the numerous multiplayer games coming up in 2015, and one of the most promising, is *Evolve*. The work of Turtle Rock, the creators of the original *Left 4 Dead*, *Evolve* is a sci-fi shooter with a difference. In it, four players form a squad of human soldiers armed with high-tech weapons and armour, while a fifth player assumes the role of a gigantic alien monster.

This is, as we've mentioned in previous editions, is what industry types commonly call an asymmetrical multiplayer game, which Turtle Rock already mastered with *Left 4 Dead*. What *Evolve* should offer, though, is a different mix of competition and cooperation; the various classes that form the human Hunters will have to work together to bring down the monster, which inevitably makes up for in strength what it lacks in advanced weaponry.

There are lots of little mechanics that should hold the interest too. As the title suggests, the monster can evolve itself into larger and more powerful forms



▲ *Left 4 Dead* creators Turtle Rock attempt to shake up the multiplayer shooter genre again with *Evolve*. It's four humans against one massive monster that won't go down without a fight

by killing other, smaller creatures or forming a cocoon around yourself. Assuming you can remain safely inside your cocoon without being killed, your risk will be rewarded with even greater strength and stature.

Turtle Rock has been revealing more of the monsters and their capabilities over the last few weeks. The Goliath is a humanoid beast that can breathe fire, throw rocks, charge like a rhino or send out a deadly shockwave by jumping on the ground. The Kraken is an aquatic-looking creature that can spit lightning, blasts of energy and mines.

The studio has said there'll be more monsters besides, as well as additional human characters and maps. While the maps will be given away for free, the

characters and monsters will have to be purchased. Turtle Rock insists that this DLC won't drive a wedge between players who stump up for it and those who don't, though: "The main idea is that we don't want to split the community," the studio recently said on Reddit. "We want to set it up so that if you don't want to buy DLC, your experience is still enhanced by its presence."

Turtle Rock also hopes that *Evolve* could end up being as popular among eSports enthusiasts as *Counter-Strike* and *Team Fortress 2*. As studio co-founder Chris Ashton explained:

"Our initial idea was squads of five. Our monster plays against your Hunters. Your Monster plays against our Hunters. Play one match straight

up. If our Hunters win and our Monster wins, we're done. We move onto the next round. If both our Monsters win, we go into some sort of tie breaker."

The key to success is, of course, all about balance and feel. *Evolve*'s as much fun to play as its premise suggests, then the game – due out on the 10th of February – may prove to be a worthy evolution of the ideas established by *Left 4 Dead* back in 2008.

## Incoming

In 2013, the action platformer *Mighty No 9* successfully got its funding on Kickstarter, and there's not long to go until the finished game finally arrives. Created by Japanese industry

legend Keiji Inafune, *Mighty No 9* is billed as his spiritual successor to the *Mega Man* series of platform games. We got our hands on an early build of Inafune's game, and while its 2.5D graphics are certainly slick and cartoonlike, the way it handles is as fluid and addictive as a classic console game from the 1980s – the process of stunning enemies with your laser blaster and then ramming them is tricky to master but extremely satisfying when you get it just right. Given that Capcom seems oddly reluctant to revive *Mega Man* itself, Inafune's plucky robot hero, Beck, makes for a worthy replacement. *Mighty No 9* is due out in April.



▲ Legendary game designer Keiji Inafune returns with *Mighty No 9*, the spiritual successor to *Mega Man*. The rock-hard action platformer's out in April

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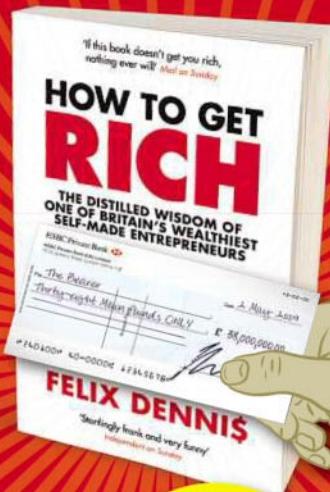
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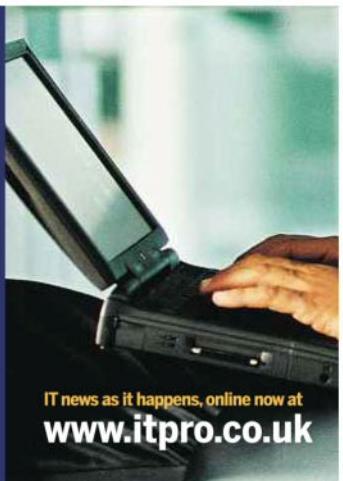
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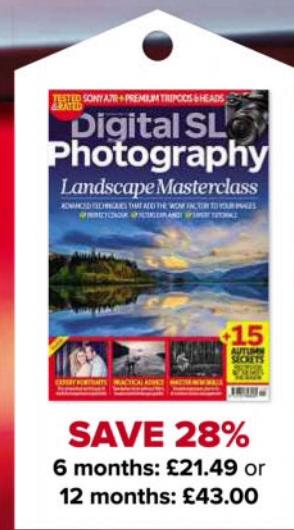
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## Offline Log On

I'm having a problem with my laptop on my home network (wi-fi). Basically, when I try to log on to the system all I get is a message that says 'Your PC is offline. Please sign in with the last password used on this PC.'

I've tried my password several times, as I haven't changed it recently, but it doesn't work, and my wi-fi switch is on, so I should be connected, so I don't really understand why the message is saying otherwise.

The only change I've made recently is with my email (I use Hotmail). I changed my password, as a friend said that it was hacked and that I should change it. That's the only change I've made, though, and I'm now locked out of my PC it seems, with no way to get back on.

Do you have any suggestions, and any ideas what could have caused this? As I can't use my PC, I'd welcome any advice.

**Colin**

Windows Live accounts can be great, as they help keep everything tied together and easy to access, but it can also be a royal pain when things go wrong, especially if it stops you logging into your PC, as in this case.

However, I suspect your problem isn't only down to your Live account. It would also appear as though your laptop is actually offline. Just because your wi-fi is on, it doesn't mean that you're online and connected. You may have an actual problem with your wi-fi setup that's preventing your laptop connecting, which it actually does automatically as part of its start up procedure.

If possible, I'd first try to connect your laptop to your home network with a cable, and see if the difficulty with logging on goes away. It may not, as there looks to be something wrong with your password. If you changed it online, and the laptop can't connect to validate that, you could see this problem manifest.

Taking internet connectivity out of the question, we're left with your password, which isn't being recognised by Windows. This can happen due to a number of reasons, and as you mentioned you changed your email password, I think I know what's happened.

Basically, your Windows Live account (or Microsoft account) now covers everything Microsoft. That's Windows, email, Skype and even Xbox, if you have one. If you change the password for one, the others also change. So if you

changed your password on your email, your Windows password will also change. This isn't usually a problem, and if you change your Windows password you'll rarely run into problems. However, due to the way Windows boots up and your account authenticates, it can be a problem if the password is changed elsewhere, such as email, and Windows is unable to synchronise. Your situation is a common symptom of this.

As your laptop looks like it's unable to connect to the internet, it cannot verify a password change, so it's likely still using the old password you used prior to the change you made to your email account. Try logging in with your previous password and see if Windows can log on. If you can log on using a wired connection, you really shouldn't have a problem, as it'll authenticate.

Of course, also check the basics, such as caps lock and any case sensitive characters, but I assume you've already checked this.

If you still have problems, you can visit the Microsoft account recovery page at [account.live.com/acsr](http://account.live.com/acsr). You can do this on another PC, but be sure it's a trustworthy system.

I should also point out that you may run into extra problems if you use Microsoft's two-step verification (which uses an extra code sent to you from Microsoft). If you have problems with this code (such as a change in verification address), you'll need to go to the Microsoft Sign-in page (<https://login.live.com>). Once there, pick the option to use a different verification and then select 'I don't have these any more' and follow the prompts.

◀ Windows 8 logins are tied to your global Microsoft account

## Page Turner

My Windows 8 laptop has become pretty much unusable. While using Windows, around ten to 15 minutes after turning the machine on, I get the error 'Page in Non-Paged Area', and my system reboots. When it does, it's usable again for a while, but the problem only happens again, and keeps happening.

When I first got the error, it didn't happen so often, but it seems to have started to appear more and more often now. I don't have a clue what this is and even less idea how to fix it. Can you please help?

### Nev

*This error is almost certainly down to memory issues, and is often a physical problem with the system RAM. If you're unlucky, your laptop's RAM may be faulty and need replacing. However, it may also simply need reseating. It may also involve Windows' page file, which I'll look at last.*

*Reseating the RAM is easy enough on most laptops. Usually there'll be a small panel on the underside of the unit, which you can remove to reveal the RAM modules. You can then remove and reinstall them, and when doing so I'd also ensure the contacts are all clean. Before you do this, always check the conditions of your warranty, and make sure this won't void it. If your system is still covered, you could get a replacement if needed.*

*If reseating the RAM doesn't solve the problem, you should run a memory test to check if the memory is faulty. A lot of laptops these days have their own built-in diagnostics, accessed during boot-up, so check your documentation for this. Failing*

*that, you could use a third-party application. MemTest86 is one of the best, and it's free. You can grab it from [www.memtest86.com](http://www.memtest86.com). This can then be used to fully test your RAM, and it should be able to help find out what's wrong and confirm a problem so you're not spending money on replacement RAM for no reason.*

*I mentioned that the problem could be connected to the Windows page file, and a possible solution for this involves changing the way Windows handles its virtual memory. First, though, you should run a check of the drive itself. In Explorer, right-click a drive and select Properties > Tools and then click 'Check'. This will check your hard disk for any possible faults.*

*With this done, you can now reset the virtual memory used for the page file. To do this, open Explorer and right-click 'This PC' and select 'Properties'. Click 'Advanced System Settings' and in the new window go to the Advanced tab, and then click 'Settings' in the Performance section.*

*Next, go into the Advanced tab and click the 'Change' button found in the Virtual Memory section. Select the option for 'No paging file' on each drive and then click OK and reboot. When the system is back on, go back into the virtual memory section and ensure each drive is set to be managed by the system. If you prefer, tick the first box that reads 'Automatically manage paging file size for all drives'.*

*This should re-allocate space the Windows page file, so if there were problem with your actual hard drive, it should help work around it.*

▼ **Memtest86 is a free memory tester that's useful for checking RAM for problems before you buy new**

```

PassMark MemTest86 V5.0b6 Pro Intel Core i7-2600 @ 3.40GHz
Clik/Temp: 3257 MHz | Pass 40% #####
L1 Cache: 64K 105220 MB/s | Test 64% #####
L2 Cache: 6144K 37201 MB/s | Test 3 [Moving Inversions, ones & zeroes]
L3 Cache: None | Testing: 0x10000000 - 0x20000000
Memory : 3583M 14279 MB/s | Pattern: 0xFFFFFFFF
RAM Info:

CPU: 0 | CPUs Found: 1
State: \ | CPUs Started: 1 CPUs Active: 1
Time: 0:00:34 AdrsMode:64Bit Pass: 3 of 3 Errors: 52

Error Log:
[ECC Uncorrected] Test: 1 Addr: (1FF,1FF,FFFF,FFFF) Syn: 0FEE Ch: 1 CPU: 0
[ECC Uncorrected] Test: 3 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
[ECC Corrected] Test: 3 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
>[ECC Uncorrected] Test: 3 Addr: (1FF,1FF,FFFF,FFFF) Syn: 0FEE Ch: 1 CPU: 0
[ECC Uncorrected] Test: 0 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
[ECC Corrected] Test: 0 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
[ECC Uncorrected] Test: 0 Addr: (1FF,1FF,FFFF,FFFF) Syn: 0FEE Ch: 1 CPU: 0
[ECC Uncorrected] Test: 1 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
[ECC Corrected] Test: 1 Addr: 1111FFFFFF Syn: 0FDD Ch: 0 CPU: 0
(ESC) / (c)onfiguration

```

# ASK JASON



**Meet Jason D'Allison, a veteran of Micro Mart's panel of experts. He's here to help with any technical questions, including anything to do with tablets or smartphones, as well as PCs**

Send your questions to:  
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Micro Mart  
Dennis Publishing  
30 Cleveland Street  
London  
W1T 4JD

Contact Jason by email at:  
[jason@micromart.co.uk](mailto:jason@micromart.co.uk)

While we try to cover as many questions as we can, we regret that Jason cannot answer your questions personally, but he'll cover as many as he possibly can each week. Please ask one question per letter and remember to include the full specification of your computer, including its operating system.

# Jason

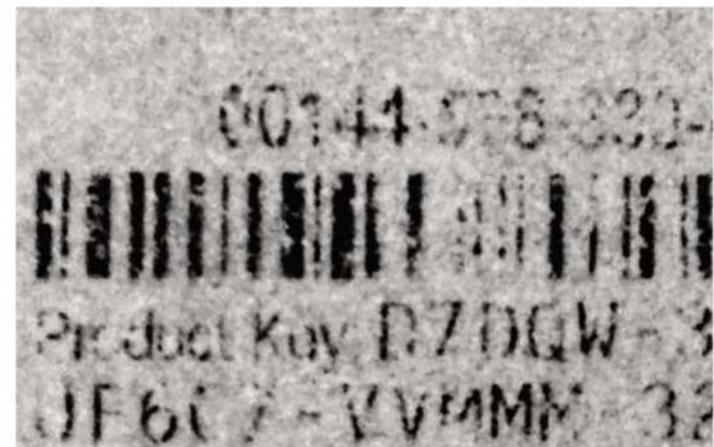
## Code Breaker

I acquired a laptop a few days ago from a boot sale. It didn't have a hard drive, so I've fitted a spare, and all seems well – Linux Mint runs without issue, anyway. There's a Windows product-key sticker on the base, but some of the characters have rubbed away and I'm going to have to make a few guesses! Also, I've no idea what version of Windows it's for (this has also rubbed away). I've taken a photo for you – can you help?

**Daniel Robertson, Gmail**

*It's infuriating, isn't it? Someone paid for that licence back in the day and now that it's unreadable someone else is expected to pay for another. Ridiculous. It happens a lot. The erosion problem was one of the reasons laptop manufacturers started putting product-key stickers inside battery compartments. And Windows 8 machines don't have product-key stickers at all.*

*All's not lost, though, Daniel. Far from it. First off, on your photo I can see the code X13-04660. All product-key stickers have a code like this, and it's the ID of the Windows version. Oddly, it rarely rubs away, even when the rest of the sticker's illegible. Luckily, I know all these IDs by heart (you believe me, right?), and X13-*



*▲ If your product key's illegible, a little knowledge and ingenuity goes a long way*

04660 is the code for Vista Business.

Next up, open your photo in, say, Paint.NET (free at [www.getpaint.net](http://www.getpaint.net)). Zoom in as far as you can before the characters begin to pixelate. You'll be amazed at how much this helps – some of those illegible characters will become a lot more guessable. You can probably make things even clearer by converting the photo to grey-scale and boosting the contrast, bringing out the black ink against the pale background. Have a fiddle with the options under Paint.NET's Adjustments and Effects menus.

Characters such as D, M, W, 2, and 4 are usually guessable even when they're half rubbed away. For characters that can be ambiguous, Microsoft has made matters easier (for

once!) by rendering several invalid. Got a character that could be a 0 (number), O (letter), or Q? It's a Q, as 0 and O are never used. What about something that could be a Z? Think again – it's a 7. And if you think there's a 1 (one), I (i), or L, you're wrong – all three are outlawed. The full list of invalid characters is as follows: A, E, I (i), L, N, O (letter), S, U, Z, 1 (one), and 0 (number).

All in all, Daniel, you should discover the correct product key after a couple of dozen attempts at most. Just keep banging in combinations until the Vista Business installation wizard says you're good to go. Oh, and the key will work with both 32-bit and 64-bit flavours. Take your pick. After you've somehow 'acquired' a setup DVD, that is...

## Ring Out The Old

Well, by the time you read this, 2015 will be in full swing. Of course, I'm writing these words even before it's Christmas – I've only just blown the dust off the baubles and fairly lights taken down from the loft. Christmas shopping? Nope – barely started. The 24th is soon enough for anyone. B&M rarely runs out of stock.

Anyway, Happy New Year, my friends! My very best wishes to one and all. I hope the coming months are happy and healthy for you and yours. And in these troubling, cash-strapped, dispiriting times, remember to embrace what you've got and don't

dwell on what you've not. I always say that, and it's because it's a lesson I took far too long to learn. Here's to a fabulously geeky and gadgety 2015!

MY NEW YEAR'S  
RESOLUTION IS  
256 X 240

## Take Note

Here's someone else having trouble with a second-hand item...

I've just purchased a used Galaxy Note II phablet (model GT-N7105). It's terrific – except for an issue with the stylus. Unfortunately, it writes even when it's a good centimetre from the screen. This means I get squiggles all over the 'page' when moving from one word to another or when creating different areas of a drawing. Icons and options tend to get wrongly selected, too. I've disabled all settings that look like they could be the cause.

Interestingly, I've tried the stylus from a work colleague's original Note (model GT-N7100), and that works a treat. As expected, the seller claims everything worked fine when the Note II was dispatched, and I don't really want to return it. Do you think it's just the stylus that's faulty? I can buy a genuine replacement for about £15. Or is there maybe a hardware issue with the phablet itself?

**Patrick, Anglesey**

The S Pen is a nifty piece of kit. For a start, whilst it has a circuit board, it doesn't have a battery. A bit of a head-scratcher, eh? On a Note (any generation), a special layer of coils beneath the screen produces an electromagnetic field, and it's from this that the S Pen draws its power. It's also from this that the Note works out the location of the S Pen's 'nib'. The field extends beyond the screen's surface by about 12mm, which is how the Air View feature is able to display pop-up tips when the nib's merely hovering over icons and not actually touching them.

Inside the S Pen is a potentiometer. This control's the sensitivity – how strong the field needs to be for the S Pen to send the Note a 'draw' command. When this is properly calibrated, 'draw' commands will only be sent when the nib actually touches the screen (though the physical contact has nothing to do with it), giving the illusion that you're writing on it. However, if it's too sensitive, Patrick, the result is exactly what you've described.

Thankfully, the potentiometer can be adjusted. It lies beneath the button on the

S Pen's barrel. Pop off the button's cover with a blade or similar implement and eyeball the screw nearest the nib. Turn this clockwise – just a little. Adjust it as needed until the S Pen behaves itself. That should see you right, and it won't cost a penny.

▼ There's a lot more to Samsung's S Pen than you might imagine



## What The Dell?

And here are yet more second-hand shenanigans...

I recently bought a Dell Latitude E4300 laptop for under £50 from a Micro Mart advertiser. It's a Core 2 Duo affair, so quite old, but it's great for my commuter journeys, especially with its solid, magnesium-alloy chassis. The included licence for Windows 7 Professional is probably worth £50 by itself.

In Device Manager, however, there's an entry for a piece of non-installed hardware – Broadcom USH. Google suggests this is connected to Dell's Control Point, whatever that is, but I can't find a driver. None of the eleven relevant drivers on Dell's website seems to do anything. Any ideas?

**Alan, Lancashire**

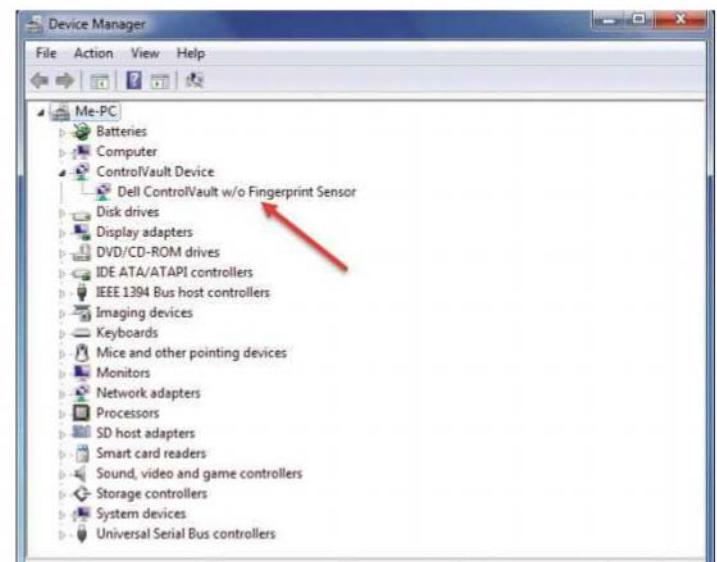
I've got an E4300 in my office – a test rig – so I thought I'd try to replicate your problem. I flattened the hard drive, installed Vista Business, and sure enough came unstuck with the Broadcom USH. Just as you did, I worked out that this was part of Dell's Control Point security system, so I tried those eleven drivers on the E4300's support page. Some installed but didn't help; others threw up an error.

Very odd. So I revisited Dell's support pages and downloaded the System Detect application. This grabbed the laptop's service tag and offered up a list of drivers of its own. And under Control Point were not eleven entries but thirteen. Top of the pile was one I'd not seen before, with the promising name of Dell ControlPoint Security Device Driver ('drv\_r269802.exe'). This took over five minutes to install – heaven knows what it was doing behind the

scenes – but once done it soon knocked that rogue entry in Device Manager into touch.

So that's your answer, Alan: install Dell's System Detect. Broadcom USH in Device Manager will then become Dell ControlVault w/o Fingerprint Sensor. I'm not quite sure what that is, especially given the E4300's lack of a fingerprint reader, but I am quite sure you'll never use it.

▼ Finding drivers for unknown hardware can be a right old pain (and half the time it's really not worth the effort)



# Crowdfunding Corner

Think the keyboard can't be improved? Not everyone's so certain. Here are two Kickstarter projects that are trying to change the way we type!

## 101touch

The 101touch began with a simple question: Why can't a keyboard be more user-friendly? Given that keyboards are used for everything from typing to playing games to controlling music, shouldn't the keys they present reflect that? 101touch believes it does, and that's why their keyboard is a touchscreen with a fully-configurable display.

As well as the standard-input qwerty design, Keyboards can be created or downloaded as apps that allow you to alter the number, size, position, contents and behaviour of keys. The full-colour touchscreen allows for unconventional and interactive layouts, and if you ever want to return to a standard layout you can simply slide it in from one side. Best of all, there are no compatibility concerns – a built-in emulator means that your PC, Mac, Linux or even DOS system will simply think you've got a normal keyboard plugged in.

Unfortunately, the cheapest early bird deals are likely to be gone by the time you read this, but you could've got a keyboard for as little as £99, and the £150 tier might still have some left. Even the most expensive Kickstartered keyboards costs £170, which is 30% off the retail price. This includes free shipping anywhere in the world, and if you want multiple keyboards there are further ones available. Definitely an interesting project – especially if you've ever wanted a show-accurate *Star Trek TNG* touch-keyboard.

**URL:** [kck.st/1vVj0Rn](http://kck.st/1vVj0Rn)

**Funding Ends:** Saturday, January 10th 2015



## Next Keyboard

The announcement of third-party keyboard support on the iPhone means that many developers are coming up with their own alternatives to Apple's functional-but-basic effort. One company has turned to Kickstarter to fund development of its idea, which is designed to be faster, easier, and more advanced than Apple's own.

Additional features, we're told, will include a smart cursor for faster editing, single-tap emojis, next-word predictive text, emoji predictive text, swipe-to-type interaction, and improved upper/lower case shift function, support for colour themes, quicker access to numbers and punctuation, inline learning autocorrect and (last, but not necessarily least) custom keyboard sounds.

The keyboard is also said to be 100% private and secure, meaning no data will be collected and no additional access to your system is required. It also retains Apple's existing functionality and shortcuts, so that there's no need to choose one feature over another!

To get the keyboard, you only have to pledge CAD\$5 (Canadian), which is about £2.70. That also includes a selection of their existing apps worth CAD\$11! If you want to join the beta you can do so for CAD\$20, and above that price you can get branded accessories, such as mugs, t-shirts and hoodies. Even with over a month to go (at time of writing) they've passed their target, so this is clearly a project people feel good about.

**URL:** [kck.st/1uTneoh](http://kck.st/1uTneoh)

**Funding Ends:** Saturday, January 25th 2014



*Disclaimer: Images shown may be prototypes and Micro Mart does not formally endorse or guarantee any of the projects listed. Back them at your own risk!*

# App Of The Week

# MapMyRun

## New Year, new you? Who knows?

**N**ew Year's here, so it's probably time for our obligatory attempt at getting fitter than the previous year and/or working off the mince pies. Gym's are way too expensive for our taste, though – so we've decided the best fitness options this year is to get out and pound the streets.

If, like us, you are something of a stat junkie, who appreciates knowing how far and how fast you're running, along with how many calories you're burning in the process and your average pace-per-mile, technology has the answer. MapMyRun, is a multi-platform mobile app that can track workouts and show such details of your performance.

### Installation

Available via the Google Play Store, App Store or the Blackberry Store, MapMyRun is a 6.3MB app that installs in seconds and utilises the GPS location functions in your smart device, as well as any wi-fi connections to best determine its location relative to the route you decide to run. Once installed, you'll be asked to sign up for an account, which can be stand-alone or through one of many social networking links; Facebook, Twitter, Google, Microsoft Live etc.

After the sign up, you're asked a few personal questions. Nothing to get too worked up about: height, weight, sex and age – a few details to help best calculate the amount of calories consumed, we imagine (it wouldn't hurt to explain this better, though).

Finally, when everything is ready and you've answered the questions honestly you're faced with a simplistic dashboard, one that fits nicely onto a small screen device and is reasonably intuitive. The middle portion of the screen houses nine icons; Profile, Routes,

Workouts, Friends, Live, Nutrition, Store, FAQ and Settings – all of which are fairly self-explanatory. To begin with, these are empty, and nothing will appear until you either complete a run or populate the app with friends from other social networks.

Along the top of the screen are; Record and Log. To get these up and running (pardon the pun) all you need do is tap the Record button.

### Run, Fatboy, Run

When you start recording, MapMyRun will monitor your movements, speed, time, distance etc. and provide you with an ongoing map and current stats as you run. This is all useless while you're actually on the move (looking at the screen on your phone while running can have dire consequences). However, once you've completed the run, stop the recording and MapMyRun will display a complete map of your route, along with all those wonderful stats that make us bristle with excitement at the thought of the hundreds of calories we've just burnt off.

There are some interesting extra features that come when logged into the MapMyRun web account; the first being the map of the run, you can play back the run, using Google maps or change the activity to a bike ride instead, which will then re-calculate the stats accordingly.

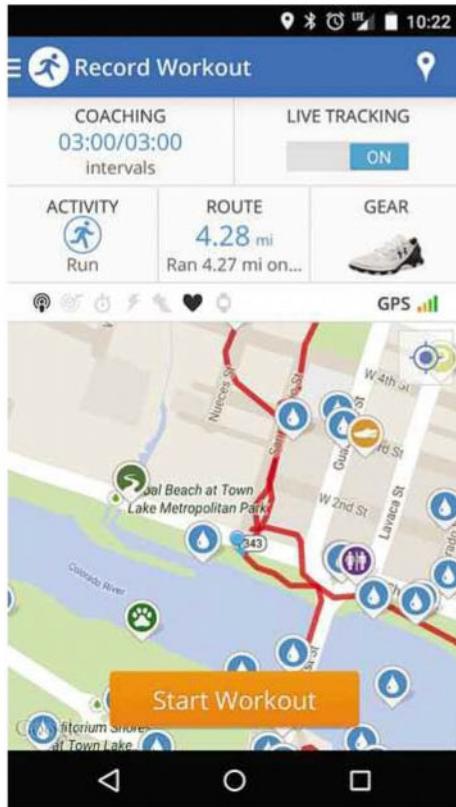
### Features At A Glance

- Map your running route
- See calories burnt, speed, distance and elevation
- Share with other running friends
- Nutrition, activity and advice all catered for

There's also the ability to mark your run as private, if you don't want Facebook to know what you're up to.



▲ You can tell that's not me. My hands are much more hairy



▲ The app can keep track of where's best to run

# Logging Off

This is a time of year that I really love, for no other reason than I can stop working without feeling guilty or lazy. Being self-employed removes words like 'weekend' and 'bank holiday' from your vocab, so it's one of the few times of the year where I'm forced to do something other than work.

But it's also the one opportunity I have to sort out minor problems that have been festering with my systems, usually

for most of the year. These include backups that aren't as fresh as they should be, fixing known faults and resolving other problems. They're mostly non-critical things that I've been meaning to fix but which aren't getting any closer to resolution.

I know for example that I have a problem in my wired network somewhere, because my servers intermittently disconnect or drop to 100Mbit from gigabit connections. I need to hunt the problem, using my trusty cable tester, to work out what keeps causing this. It might be cables, it could be my switch, or it could something paranormal – who knows?

And my HP N40L server currently has no external USB connections other than USB 2.0, whereas I have a USB 3.0 PCIe card (low profile) sitting ready to upgrade it.

On that system I also want to clone the boot drive to a free SSD when the opportunity arises. The list of fixes I could do is almost endless, it appears.

If I was able to just do these jobs exclusively, there's easily a whole month of things to do, not that I'll get anywhere near that amount of time to go problem solving. But if I get a few days, that's something, and I'll be especially pleased if I knock a few of the biggest annoyances on the head in the process.

Being into computing, I've concluded, is much like owning a classic car that needs regular attention. You can ignore these things for a while, but you're just putting off the evil day when you'll need to do that oil change, replace those wheel bearings or do that firmware upgrade.

To some people, those who buy consumer electronics, I must seem mildly mad, because they just want to purchase a device and use it, without considering if it's running right or efficiently. Personally, I've been pre-programmed to look at everything I own with an eye on upgrades, how it might be repurposed, hacked or overclocked.

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## THIS WEEK'S CROSSWORD

I'm sure someone will write to me and tell me to refer myself for a compulsive disorder, as normal people don't worry about these things or even ever consider them.

Yet I'm sure regular readers of this magazine are the same, and some might be not thinking about turkey, mince pies and *The Great Escape* but instead about relocating their router or virus checking their children's laptop.

I think this time of year is about finding enjoyment in little things. For some, those small pleasures might be a single malt whiskey or reindeer antler headbands. For me, they're wielding a screwdriver and toying with the idea of automating my Christmas lights using an Arduino.

Whatever you choose to do over the festive break, have an enjoyable season, and be considerate to those around you who are happy to use wi-fi without understanding how it works.

**Mark Pickavance**



## LAST WEEK'S CROSSWORD

**Across:** 7 Extemporany, 8 Malawi, 9 Ripper, 10 Isoline, 12 Claim, 14 Slave, 16 Plus One, 19 Tricky, 20 Bounce, 22 Equilibrium.

**Down:** 1 Zeta, 2 St Paul, 3 Ambient, 4 Moore, 5 PayPal, 6 Hyperion, 11 Salaried, 13 Alibaba, 15 Vacuum, 17 Studio, 18 Cycle, 21 CDMA.

### DISCLAIMER

The views expressed by contributors are not necessarily those of the publishers. Every care is taken to ensure that the contents of the magazine are accurate but the publishers cannot accept responsibility for errors. While reasonable care is taken when accepting advertisements, the publishers cannot accept any responsibility for any resulting unsatisfactory transactions. As usual, we're writing this just before Christmas, but it won't be published until January, so as we've done before, we're going to have a little go at predicting what will have happened in the world between now and when you eventually read this in a few weeks. First of all, the world will be rocked by the news that

Santa Claus is a fraud, and rather than delivering presents himself, he's been using private courier companies for years. That's why they haven't been arriving and you've had to buy your kids' gifts yourself. A couple of days later, scientists will prove that no one really likes turkey and that we'd all be far better off just eating chicken. On New Years Eve, everyone below 30 will be getting very excited about the fact it's January again and that we get to do pretty much whatever we're doing before but with a slightly different number to write when we sign forms. Everyone else will simply say "Meh" and just watch it on the telly, because they're not paying to get into a pub. Also, it will snow. In Alaska. Probably.

### Across

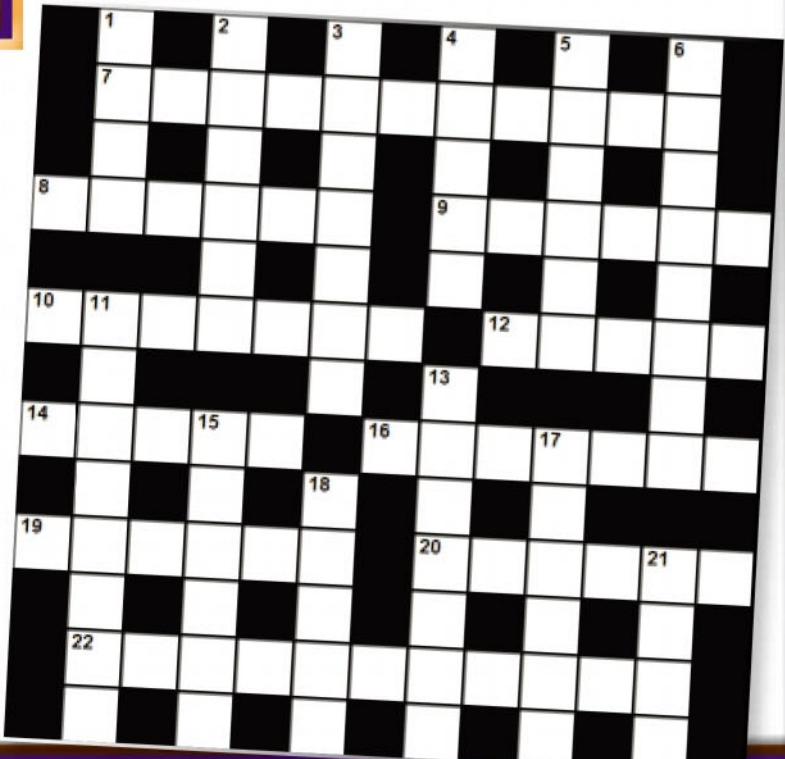
- 7 How to get noticed on YouTube? (6,5)  
8 An extension that modifies the interface and/or behaviour of a web browser. (6)  
9 An area where light from a light source is obstructed by an object. (6)  
10 Notification of something, usually in advance. (7)  
12 S.I. unit of inductance. (5)  
14 Linux firewall distribution geared towards home and SOHO users. (5)  
16 Take for granted that something exists or is the case. (7)  
19 Once the world's largest dedicated computer security technology company, now a wholly owned subsidiary of Intel. (6)  
20 To give off gas or heat. (6)  
22 Aiming to understand fundamental principles rather than developing practical applications. (11)

### Down

- 1 A style of network communication where the initial request for data originates from

the client and then is responded to by the server. (4)

- 2 In advertising a phrase designed to create an association with a specific product. (6)  
3 Shots in billiards where the cueball contacts one object ball and then the other. (7)  
4 Essential free anti-virus software shipmates. (5)  
5 Free software with a non optional advertising element. (6)  
6 A three-dimensional image formed by the interference of light beams from a laser or other coherent light source. (8)  
11 The current in amperes that a conductor can carry continuously under given conditions of use without exceeding its temperature rating. (8)  
13 An incandescent cloud of gas, ash and lava fragments ejected from a volcano. (7)  
15 Compensating equivalent. (6)  
17 To sit in a lazy, drooping way. (6)  
18 The term for any category of literature or other forms of art or entertainment. (5)  
21 The SI unit of electromotive force. (4)



# In Next Week's Micro Mart\*

- 38 ways to make your computer go faster
- Has Google Plus been a success so far?
- Which ereader app should you use?
- Sound cards tried and tested
- Plus the usual mix of news, reviews and advice



\* May be subject to change

# We're Not Playing Around

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